



MAXWELL
SIERRA CAPACITOR/FILTER Division

High Reliability EMI Filters • Multilayer Ceramic Capacitors



INTRODUCTION

Maxwell supplies the aerospace, military, geophysical, geothermal and medical markets with high reliability EMI filters and multilayer ceramic capacitors.

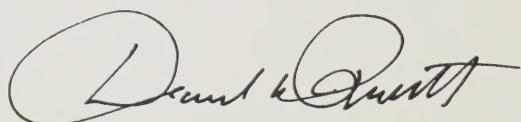
Components made by Maxwell meet or exceed the demanding military and quality assurance specifications described in each product section. We welcome your SCD's and custom specifications.

Our new facility is specifically designed to gain the optimum production efficiency for the manufacture of multilayer ceramic capacitors and EMI filters. Product design, process engineering, production sequences and quality assurance testing are logical and efficient. Our equipment and product technology are state-of-the-art.

The staff at Maxwell is well-qualified and have been major factors in this business for over three decades. We are all experienced and accomplished in our areas of responsibility.

Maxwell knows how to build high reliability products. Our yields are high, we ship when promised, and our prices are competitive.

You are invited to visit us at any time, either for a full-scale survey, or for an informal plant tour.

A handwritten signature in black ink, appearing to read "Donald N. Pruett".

Donald N. Pruett
President



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*C3 = Ceramic Cased Capacitors. Patent No. 4,931,899

COAXIAL BROADBAND EMI FILTERS

C-SECTION (FEED-THRU)



APPLICATIONS:

C-Section feed-thru filters are used where circuit source and load impedances are high. Primary applications are for by-passing RF to ground, decoupling, feed-back prevention between circuits and other applications where internal capacitor inductance must be at a minimum. The capacitance values listed will have a resonant dip between 3-16 MHz and is reflected in the insertion loss values specified at 1 and 10 MHz.

FIG. 1

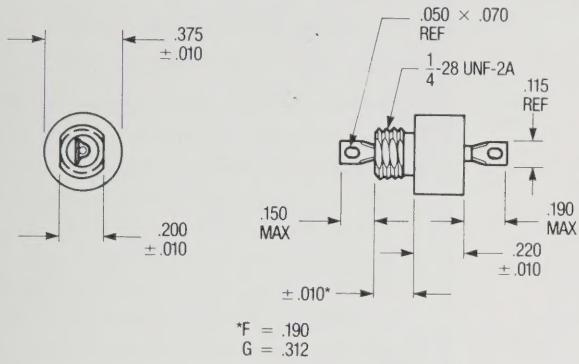
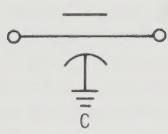
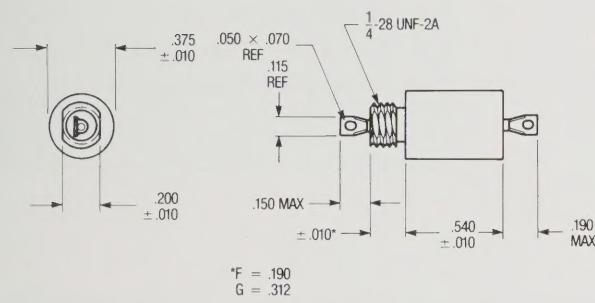


FIG. 2



C-SECTION CIRCUIT

GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to +125°C.
2. Rated Current: 15 amperes, maximum.
3. Capacitance Tolerance: -0, +100 percent.
4. Dissipation Factor: 3.0 percent, maximum.
5. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
6. Insulation Resistance: 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. Voltage Drop: Rated current x Rdc
8. DC Resistance: See Table.
9. Temperature Rise: +25°C maximum.
10. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.

NOTES: 1. For complete part number designations and codes, see pages 28 & 29
 2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
 3. Imperfect thread or undercut optional .050 inches maximum.
 4. One imperfect thread allowed .035 inches maximum.

MAXWELL PART NUMBER	Fig.	Working Voltage (DC)	Min. Cap. (μ F)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
					30 KHz	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
3723-B *2-504S	1	50	.5	.005	--	16	20	26	36	45	70
3723-B *2-754S	1	50	.75	.005	10	20	24	30	40	40	70
3723-B *2-145S	1	50	1.4	.005	15	25	28	34	40	40	70
3723-D *2-504S	1	100	.5	.005	--	16	20	26	36	45	70
3723-D *2-754S	1	100	.75	.005	10	20	24	30	40	40	70
3723-F *2-104S	1	200	.1	.005	--	--	5	11	21	41	60
3723-F *2-154S	1	200	.15	.005	--	6	10	16	26	40	70
3723-F *2-304S	1	200	.3	.005	4	11	15	21	31	40	70
3723-N *2-753S	1	125VAC 0-400Hz	.075	.005	--	--	--	8	18	36	60
3723-N *2-154S	1	125VAC 0-400Hz	.15	.005	--	6	10	16	26	40	70
3724-B *2-105S	2	50	1.0	.01	12	21	25	31	40	40	70
3724-B *2-155S	2	50	1.5	.01	15	25	28	34	40	40	70
3724-B *2-285S	2	50	2.8	.01	20	30	34	40	40	50	70
3724-D *2-105S	2	100	1.0	.01	12	21	25	31	40	40	70
3724-D *2-155S	2	100	1.5	.01	15	25	28	34	40	40	70
3724-F *2-205S	2	200	2.0	.01	--	8	12	18	28	40	70
3724-F *2-305S	2	200	3.0	.01	4	11	15	21	31	40	70
3724-F *2-405S	2	200	4.0	.01	6	14	18	24	34	40	70
3724-N *2-205S	2	125VAC 0-400Hz	2.0	.01	--	8	12	18	28	40	70
3724-N *2-305S	2	125VAC 0-400Hz	3.0	.01	4	11	15	21	31	40	70

COAXIAL BROADBAND EMI FILTERS

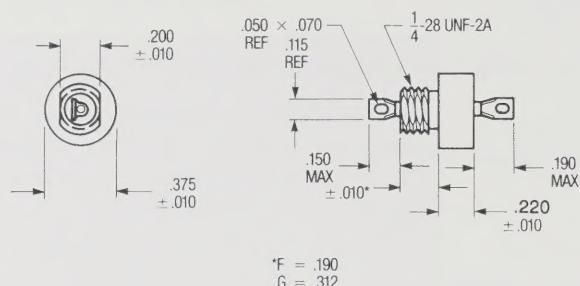
L-SECTION (BUTTON)

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APPLICATIONS:

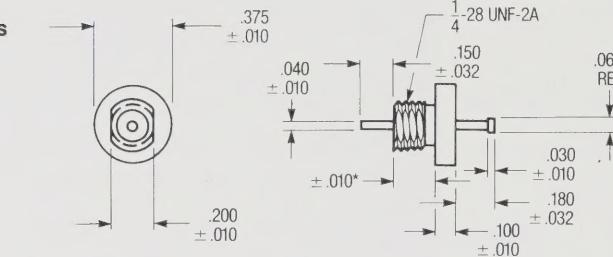
L-Section button filters are used in circuits which require maximum series impedance above 10 MHz. The ferrite bead material offers 2-3 μH of inductance from 100 KHz to 1 MHz. Z over this frequency range varies from 2-12 ohms. At 15 MHz the inductance equals 0 and Z equals 40 ohms. The application of dc current will saturate the bead and result in lower impedance values. At 5.0 amps Z equals 0 and insertion loss performance is equal to a C-Section feed-thru. Mil specs now reflect this as the filters are rated at 15.0 amps.

FIG. 1



*F = .190
G = .312

FIG. 2
Epoxy Seals



*F = .190
G = .312

NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.



L-SECTION CIRCUIT

GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to +125°C.
2. Rated Current: 15 amperes, maximum.
3. Capacitance Tolerance: -0, +100 percent.
4. Dissipation Factor: 3.0 percent, maximum.
5. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
6. Insulation Resistance: 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. Voltage Drop: .075 volt, maximum.
8. DC Resistance: .005 ohm, maximum.
9. Temperature Rise: +25°C maximum.
10. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds \pm 1 second. 50 mA maximum charging current.

MAXWELL PART NUMBER	Fig.	Working Voltage (DC)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
				30 KHz	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
3720-B_2-504S	1	50	.5	--	16	20	26	36	40	70
3720-B_2-754S	1	50	.75	10	20	24	30	40	40	70
3720-B_2-145S	1	50	1.4	15	25	28	34	40	40	70
3720-D_2-504S	1	100	.5	--	16	20	26	36	40	70
3720-D_2-754S	1	100	.75	10	20	24	30	40	40	70
3720-N_2-753S	1	125VAC 0-400Hz	.075	--	--	--	8	18	36	60
3720-N_2-154S	1	125VAC 0-400Hz	.15	--	6	10	16	26	40	70
3721-B_2-504S	2	50	.5	--	16	20	26	36	40	70
3721-B_2-754S	2	50	.75	10	20	24	30	40	40	70
3721-B_2-145S	2	50	1.4	15	25	28	34	40	40	70
3721-D_2-504S	2	100	.5	--	16	20	26	36	40	70
3721-D_2-754S	2	100	.75	10	20	24	30	40	40	70
3721-N_2-753S	2	125VAC 0-400Hz	.075	--	--	--	8	18	36	60

COAXIAL BROADBAND EMI FILTERS

C-SECTION (FEED-THRU)

MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

C-Section feed-thru filters are used where circuit source and load impedances are high. Primary applications are for by-passing RF to ground, decoupling, feed-back prevention between circuits and other applications where internal capacitor inductance must be at a minimum. The capacitance values listed will have a resonant dip between 3-16 MHz and this is reflected in the insertion loss values specified at 1 and 10 MHz.

FIG. 1

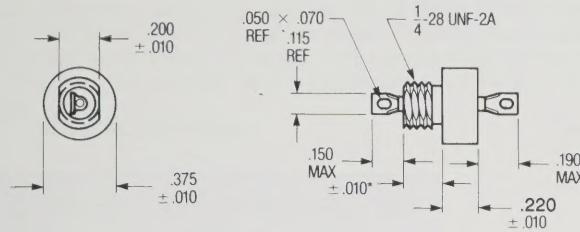
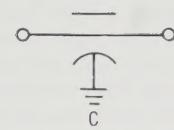
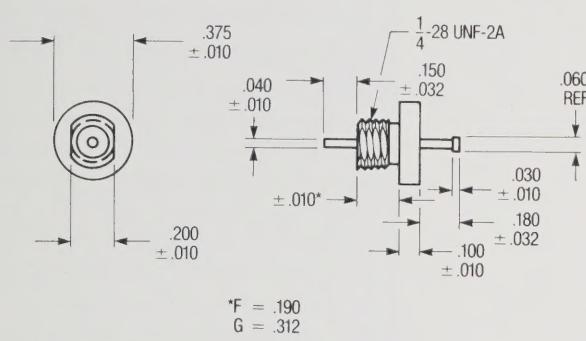


FIG. 2
Epoxy Seals



C-SECTION CIRCUIT

GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to +125°C.
2. Rated Current: 15 amperes, maximum.
3. Capacitance Tolerance: -0, +100 percent.
4. Dissipation Factor: 3.0 percent, maximum.
5. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
6. Insulation Resistance: 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. Voltage Drop: .075 volt, maximum.
8. DC Resistance: .005 ohm, maximum.
9. Temperature Rise: +25°C maximum.
10. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.

NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
 3. Imperfect thread or undercut optional .050 inches maximum.
 4. One imperfect thread allowed .035 inches maximum.

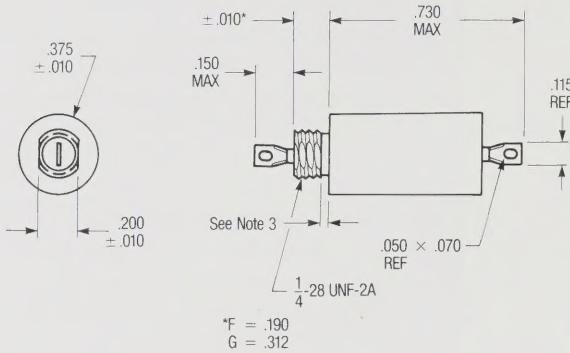
MAXWELL PART NUMBER	Fig.	Working Voltage (DC)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
				30 KHz	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
3710-B * 2-103S	1	50	.01	--	--	--	--	--	22	45
3710-B * 2-504S	1	50	.5	--	16	20	26	36	45	70
3710-B * 2-754S	1	50	.75	10	20	24	30	40	40	70
3710-B * 2-145S	1	50	1.4	15	25	28	34	40	40	70
3710-D * 2-103S	1	100	.01	--	--	--	--	--	22	45
3710-D * 2-504S	1	100	.5	--	16	20	26	36	45	70
3710-D * 2-754S	1	100	.75	10	20	24	30	40	40	70
3710-F * 2-154S	1	200	.15	--	6	10	16	26	40	70
3710-N * 2-753S	1	125VAC 0-400Hz	.075	--	--	--	8	18	36	60
3710-N * 2-104S	1	125VAC 0-400Hz	.1	--	--	5	11	21	41	60
3710-N * 2-154S	1	125VAC 0-400Hz	.15	--	6	10	16	26	40	70
3711-B * 2-103S	2	50	.01	--	--	--	--	--	22	45
3711-B * 2-504S	2	50	.5	--	16	20	26	36	45	70
3711-B * 2-754S	2	50	.75	10	20	24	30	40	40	70
3711-B * 2-145S	2	50	1.4	15	25	28	34	40	40	70
3711-D * 2-103S	2	100	.01	--	--	--	--	--	22	45
3711-D * 2-504S	2	100	.5	--	16	20	26	36	45	70
3711-D * 2-754S	2	100	.75	10	20	24	30	40	40	70
3711-F * 2-154S	2	200	.15	--	6	10	16	26	40	70
3711-N * 2-753S	2	125VAC 0-400Hz	.075	--	--	--	8	18	36	60

COAXIAL BROADBAND EMI FILTERS

L-SECTION

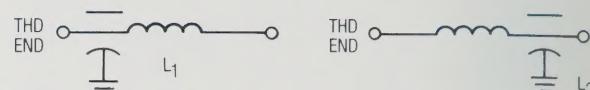
APPLICATIONS:

Standard L filters are used where circuit source impedance is low and the circuit load impedance is high. The inductor faces the source and the capacitor faces the load. Typical interfering source low impedances (voltage generator) are relay and switch contacts, SCR controls and rectifiers. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, long signal lines, line stabilization networks and transformer powered equipment. Reversed L filters are used when the circuit source impedance is high and the circuit load impedance is low. The inductor faces the load and the capacitor faces the source. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, long ac power lines and power supply-transformer inputs. Typical load low impedances (current sensitive) are current sensitive relays and solenoids and high current resistive or capacitive loads.



NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.



L-SECTION CIRCUITS

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Voltage:** 100 VDC.
3. **Rated Current:** See Table.
4. **Capacitance Tolerance:** -0, +100 percent.
5. **Dissipation Factor:** 3.0 percent, maximum.
6. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
7. **Insulation Resistance:** 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. **Voltage Drop:** Rated Current x Rdc.
9. **DC Resistance:** See Table.
10. **Temperature Rise:** +25°C maximum.
11. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.

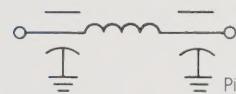
MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	Max. Idc (A)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
						30 KHz	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
3730-B * 2-03S	L2	50	1.4	.1	5	32	52	58	60	60	60	70
3731-B * 2-03S	L1	50	1.4	.1	5	32	52	58	60	60	60	70
3730-B * 2-09S	L2	50	1.4	1.0	.25	14	26	33	44	60	60	70
3731-B * 2-09S	L1	50	1.4	1.0	.25	14	26	33	44	60	60	70
3730-B * 2-13S	L2	50	1.4	5.0	.015	14	23	28	34	45	60	70
3731-B * 2-13S	L1	50	1.4	5.0	.015	14	23	28	34	45	60	70
3730-B * 2-15S	L2	50	1.4	10.0	.005	14	23	28	34	44	44	70
3731-B * 2-15S	L1	50	1.4	10.0	.005	14	23	28	34	44	44	70
3730-D * 2-03S	L2	100	.75	.1	5	26	46	54	60	60	60	70
3731-D * 2-03S	L1	100	.75	.1	5	26	46	54	60	60	60	70
3730-D * 2-09S	L2	100	.75	1.0	.25	10	23	28	40	60	60	70
3731-D * 2-09S	L1	100	.75	1.0	.25	10	23	28	40	60	60	70
3730-D * 2-13S	L2	100	.75	5.0	.015	8	18	22	28	40	60	70
3731-D * 2-13S	L1	100	.75	5.0	.015	8	18	22	28	40	60	70
3730-D * 2-15S	L2	100	.75	10.0	.005	10	20	24	30	40	40	70
3731-D * 2-15S	L1	100	.75	10.0	.005	10	20	24	30	40	40	70
3730-F * 2-03S	L2	200	.25	.1	5	18	36	44	56	60	60	70
3731-F * 2-03S	L1	200	.25	.1	5	18	36	44	56	60	60	70
3730-F * 2-09S	L2	200	.25	1.0	.25	--	14	20	30	52	60	70
3731-F * 2-09S	L1	200	.25	1.0	.25	--	14	20	30	52	60	70
3730-F * 2-13S	L2	200	.25	5.0	.015	--	10	12	18	30	55	70
3731-F * 2-13S	L1	200	.25	5.0	.015	--	10	12	18	30	55	70
3730-F * 2-15S	L2	200	.25	10.0	.005	--	10	12	18	30	40	70
3731-F * 2-15S	L1	200	.25	10.0	.005	--	10	12	18	30	40	70

COAXIAL BROADBAND EMI FILTERS Pi-SECTION

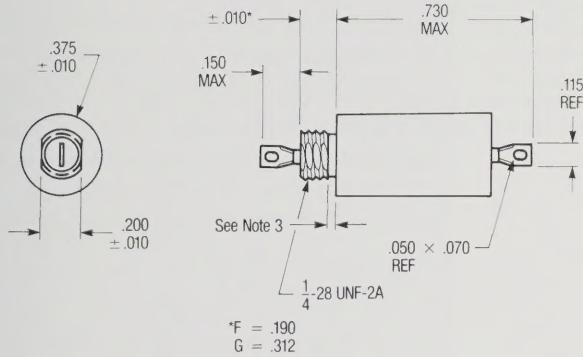
MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

Pi filters are used where circuit source and load impedances are high or vary from low to high. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, conventional long ac power lines and power supply-transformer input. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, transformer powered equipment, long signal lines and line stabilization networks. CAUTION: Do not use Pi filters where arcing (contacts) or high transient waveforms are present. Passband attenuation may go positive making the noise problems more severe than without the filter present. This is called "ringing" and is the tendency of the filter to actually oscillate.



Pi-SECTION CIRCUIT



NOTES: 1. For complete part number designations and codes, see pages 28 & 29
 2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
 3. Imperfect thread or undercut optional .050 inches maximum.
 4. One imperfect thread allowed .035 inches maximum.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Current:** See Table.
3. **Rated Voltage:** See Table.
4. **Capacitance Tolerance:** -0, +100 percent.
5. **Dissipation Factor:** 3.0 percent, maximum.
6. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
7. **Insulation Resistance:** 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. **Voltage Drop:** Rated Current x Rdc.
9. **DC Resistance:** See Table.
10. **Temperature Rise:** +25°C maximum.
11. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.

MAXWELL PART NUMBER	Working Voltage (dc)	Min. Cap (μF)	Max. Current (A)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
					30 KHz	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
3740-B_* 2-03S	50	2.8	.1	5.0	50	80	80	80	80	80	80
3740-B_* 2-08S	50	2.8	.5	.65	36	65	70	80	80	80	80
3740-B_* 2-09S	50	2.8	1.0	.25	24	59	69	80	80	80	80
3740-B_* 2-10S	50	2.8	2.0	.05	--	44	56	72	80	80	80
3740-B_* 2-11S	50	2.8	3.0	.03	--	36	46	64	80	80	80
3740-B_* 2-13S	50	2.8	5.0	.015	--	10	35	56	80	80	80
3740-B_* 2-15S	50	2.8	10.0	.005	--	--	30	54	70	80	80
3740-D_* 2-03S	100	1.5	.1	5.0	40	70	80	80	80	80	80
3740-D_* 2-08S	100	1.5	.5	.65	22	54	66	80	80	80	80
3740-D_* 2-19S	100	1.5	1.0	.25	6	46	56	70	80	80	80
3740-D_* 2-10S	100	1.5	2.0	.05	--	34	44	62	80	80	80
3740-D_* 2-11S	100	1.5	3.0	.03	--	18	34	54	80	80	80
3740-D_* 2-13S	100	1.5	5.0	.015	--	--	--	46	76	80	80
3740-D_* 2-15S	100	1.5	10.0	.005	--	--	--	36	70	80	80
3740-F_* 2-03S	200	.5	.1	5.0	24	54	64	78	80	80	80
3740-F_* 2-08S	200	.5	.5	.65	--	36	46	65	80	80	80
3740-F_* 2-09S	200	.5	1.0	.25	--	28	40	58	80	80	80
3740-F_* 2-10S	200	.5	2.0	.05	--	--	23	44	74	80	80
3740-F_* 2-11S	200	.5	3.0	.03	--	--	--	34	65	80	80
3740-F_* 2-13S	200	.5	5.0	.015	--	--	--	18	58	80	80
3740-F_* 2-15S	200	.5	10.0	.005	--	--	--	--	52	80	80

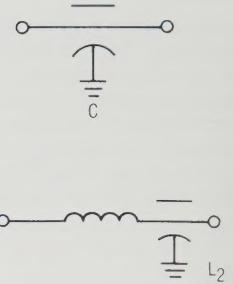
COAXIAL BROADBAND EMI FILTERS

C AND L-SECTIONS

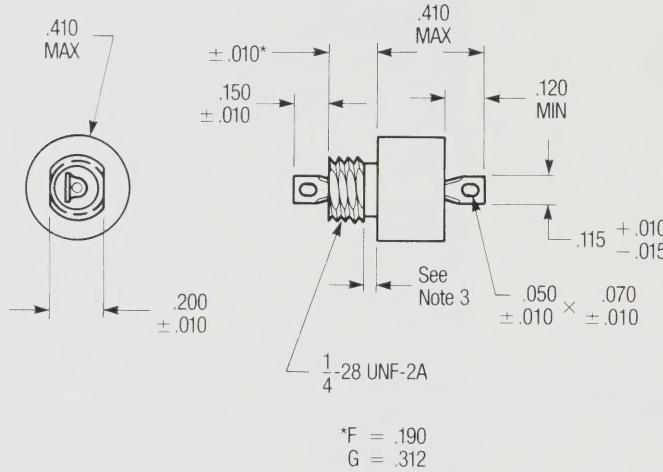


APPLICATIONS:

C-Section feed-thru filters are used where circuit source and load impedances are high. Primary applications are for by-passing RF to ground, decoupling, feed-back prevention between circuits and other applications where internal capacitor inductance must be at a minimum. The capacitance values listed will have a resonant dip between 3-16 MHz and this is reflected in the insertion loss values specified at 1 and 10 MHz.



CIRCUIT DIAGRAMS



GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Current:** 15 amperes, maximum.
3. **Capacitance Tolerance:** -0, +100 percent.
4. **Dissipation Factor:** 3.0 percent, maximum.
5. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
6. **Insulation Resistance:** 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. **Voltage Drop:** 0.12 volt, maximum.
8. **DC Resistance:** 0.008 ohm, maximum.
9. **Temperature Rise:** +25°C maximum.
10. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. **Equivalent to MIL-F-28861/1.**

NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.

MAXWELL PART NUMBER	Circuit	Min. Cap (μ F)	RATED VOLTAGE		MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
			DC VOLTS	AC 1/ VOLTS	30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
4120-B_*2-125S	L2	1.2	50	--	15	28	33	40	40	70	70
4110-B_*2-125S	C	1.2	50	--	15	28	33	40	40	70	70
4120-C_*2-704S	L2	0.7	70	--	10	24	30	40	40	64	70
4110-C_*2-704S	C	0.7	70	--	10	24	30	40	40	64	70
4120-D_*2-454S	L2	0.45	100	--	6	19	25	36	40	60	70
4110-D_*2-454S	C	0.45	100	--	6	19	25	36	40	60	70
4120-E_*2-254S	L2	0.25	150	--	--	14	20	31	40	56	70
4110-E_*2-254S	C	0.25	150	--	--	14	20	31	40	56	70
4120-N_*2-154S	L2	0.15	200	125	--	10	16	26	40	52	70
4110-N_*2-154S	C	0.15	200	125	--	10	16	26	40	52	70

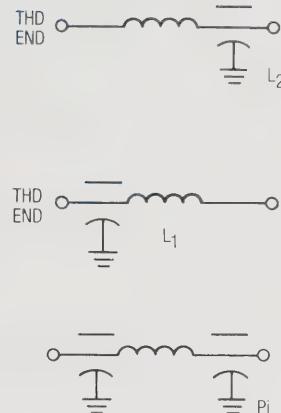
COAXIAL BROADBAND EMI FILTERS L AND PI-SECTIONS

MAXWELL
SIERRA CAPACITOR/FILTER DIVISION

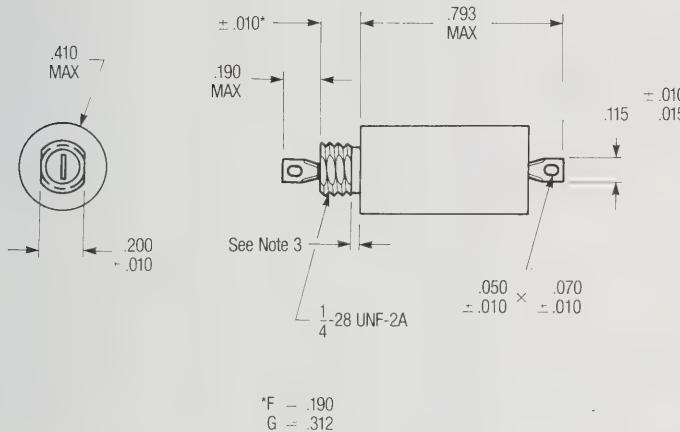
APPLICATIONS:

Standard L filters are used where circuit source impedance is low and the circuit load impedance is high. The inductor faces the source and the capacitor faces the load. Typical interfering source low impedances (voltage generator) are relay and switch contacts, SCR controls and rectifiers. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, long signal lines, line stabilization networks and transformer powered equipment. Reversed L filters are used when the circuit source impedance is high and the circuit load impedance is low. The inductor faces the load and the capacitor faces the source. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, long ac power lines and power supply-transformer inputs. Typical load low impedances (current sensitive) are current sensitive relays and solenoids and high current resistive or capacitive loads.

Pi filters are used where circuit source and load impedances are high or vary from low to high. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, conventional long ac power lines and power supply-transformer input. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, transformer powered equipment, long signal lines and line stabilization networks. CAUTION: Do not use Pi filters where arcing (contacts) or high transient waveforms are present. Passband attenuation may go positive making the noise problems more severe than without the filter present. This is called "ringing" and is the tendency of the filter to actually oscillate.



CIRCUIT DIAGRAMS



NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Voltage:** 100 VDC.
3. **Rated Current:** See Table.
4. **Capacitance Tolerance:** -0, +100 percent.
5. **Dissipation Factor:** 3.0 percent, maximum.
6. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
7. **Insulation Resistance:** 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. **Voltage Drop:** Rated Current x Rdc.
9. **DC Resistance:** See Table.
10. **Temperature Rise:** +25°C maximum.
11. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
12. **Equivalent to MIL-F-28861/2.**

MAXWELL PART NUMBER	Circuit	Max. Current (A)	Min. Cap (μF)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
					30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
4135-D_2-05S	L1	.25	.45	1.5	30	38	50	60	60	60	70
4134-D_2-05S	L2	.25	.45	1.5	30	38	50	60	60	60	70
4141-D_2-05S	Pi	.25	.90	1.5	54	64	80	80	80	80	80
4135-D_2-09S	L1	1.0	.45	.25	15	23	34	55	60	60	70
4134-D_2-09S	L2	1.0	.45	.25	15	23	34	55	60	60	70
4141-D_2-09S	Pi	1.0	.90	.25	40	52	70	80	80	80	80
4135-D_2-11S	L1	3.0	.45	.05	14	18	27	45	60	60	70
4134-D_2-11S	L2	3.0	.45	.05	14	18	27	45	60	60	70
4141-D_2-11S	Pi	3.0	.90	.05	--	25	51	80	80	80	80
4135-D_2-13S	L1	5.0	.45	.015	14	17	24	36	60	60	70
4134-D_2-13S	L2	5.0	.45	.015	14	17	24	36	60	60	70
4141-D_2-13S	Pi	5.0	.90	.015	--	--	38	75	80	80	80

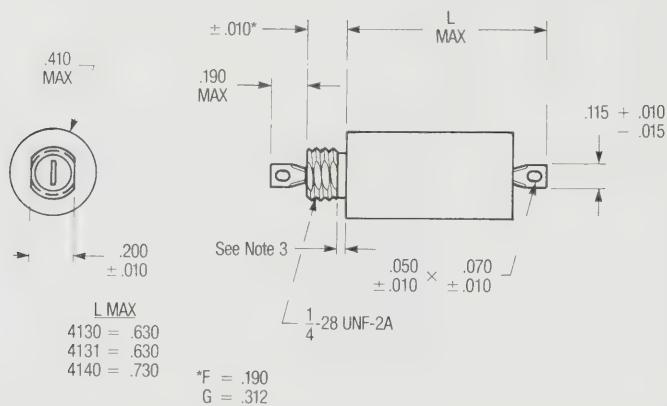
COAXIAL BROADBAND EMI FILTERS

L AND Pi-SECTIONS

APPLICATIONS:

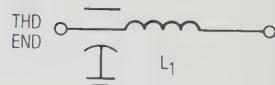
Standard L filters are used where circuit source impedance is low and the circuit load impedance is high. The inductor faces the source and the capacitor faces the load. Typical interfering source low impedances (voltage generator) are relay and switch contacts, SCR controls and rectifiers. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, long signal lines, line stabilization networks and transformer powered equipment. Reversed L filters are used when the circuit source impedance is high and the circuit load impedance is low. The inductor faces the load and the capacitor faces the source. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, long ac power lines and power supply-transformer inputs. Typical load low impedances (current sensitive) are current sensitive relays and solenoids and high current resistive or capacitive loads.

Pi filters are used where circuit source and load impedances are high or vary from low to high. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, conventional long ac power lines and power supply-transformer input. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, transformer powered equipment, long signal lines and line stabilization networks. CAUTION: Do not use Pi filters where arcing (contacts) or high transient waveforms are present. Passband attenuation may go positive making the noise problems more severe than without the filter present. This is called "ringing" and is the tendency of the filter to actually oscillate.



NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.



CIRCUIT DIAGRAMS

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Voltage:** 150 VDC.
3. **Rated Current:** See Table.
4. **Capacitance Tolerance:** -0, +100 percent.
5. **Dissipation Factor:** 3.0 percent, maximum.
6. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
7. **Insulation Resistance:** 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. **Voltage Drop:** Rated Current x Rdc.
9. **DC Resistance:** See Table.
10. **Temperature Rise:** +25°C maximum.
11. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
12. **Equivalent to MIL-F-28861/3.**

MAXWELL PART NUMBER	Circuit	Max. Current (A)	Min. Cap (μF)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
					30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
4131-E_2-03S	L1	0.1	.25	1.7	32	39	51	60	60	60	70
4130-E_2-03S	L2	0.1	.25	1.7	32	39	51	60	60	60	70
4140-E_2-03S	Pi	0.1	.50	1.7	49	60	70	80	80	80	80
4131-E_2-06S	L1	0.3	.25	.77	25	30	44	60	60	60	70
4130-E_2-06S	L2	0.3	.25	.77	25	30	44	60	60	60	70
4140-E_2-06S	Pi	0.3	.50	.77	43	53	70	80	80	80	80
4131-E_2-08S	L1	0.5	.25	.36	20	26	39	59	60	60	70
4130-E_2-08S	L2	0.5	.25	.36	20	26	39	59	60	60	70
4140-E_2-08S	Pi	0.5	.50	.36	37	48	66	80	80	80	80
4131-E_2-09S	L1	1.0	.25	.14	12	16	26	48	60	60	70
4130-E_2-09S	L2	1.0	.25	.14	12	16	26	48	60	60	70
4140-E_2-09S	Pi	1.0	.50	.14	28	40	58	80	80	80	80
4131-E_2-11S	L1	3.0	.25	.05	11	15	20	36	60	60	70
4130-E_2-11S	L2	3.0	.25	.05	11	15	20	36	60	60	70
4140-E_2-11S	Pi	3.0	.50	.05	--	--	38	70	80	80	80
4131-E_2-13S	L1	5.0	.25	.015	8	12	20	32	60	60	70
4130-E_2-13S	L2	5.0	.25	.015	8	12	20	32	60	60	70
4140-E_2-13S	Pi	5.0	.50	.015	--	--	20	63	80	80	80

COAXIAL BROADBAND EMI FILTERS

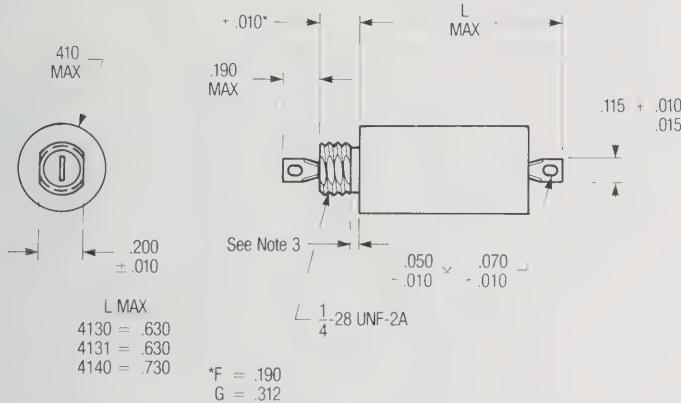
L AND PI-SECTIONS



APPLICATIONS:

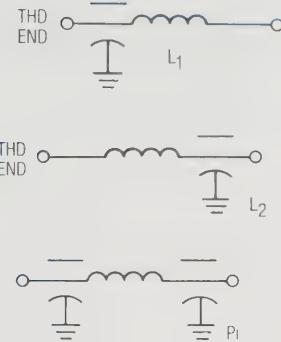
Standard L filters are used where circuit source impedance is low and the circuit load impedance is high. The inductor faces the source and the capacitor faces the load. Typical interfering source low impedances (voltage generator) are relay and switch contacts, SCR controls and rectifiers. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, long signal lines, line stabilization networks and transformer powered equipment. Reversed L filters are used when the circuit source impedance is high and the circuit load impedance is low. The inductor faces the load and the capacitor faces the source. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, long ac power lines and power supply-transformer inputs. Typical load low impedances (current sensitive) are current sensitive relays and solenoids and high current resistive or capacitive loads.

Pi filters are used where circuit source and load impedances are high or vary from low to high. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, conventional long ac power lines and power supply-transformer input. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, transformer powered equipment, long signal lines and line stabilization networks. CAUTION: Do not use Pi filters where arcing (contacts) or high transient waveforms are present. Passband attenuation may go positive making the noise problems more severe than without the filter present. This is called "ringing" and is the tendency of the filter to actually oscillate.



NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.



CIRCUIT DIAGRAMS

GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to +125°C.
2. Rated Voltage: 70 VDC.
3. Rated Current: See Table.
4. Capacitance Tolerance: -0, +100 percent.
5. Dissipation Factor: 3.0 percent, maximum.
6. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
7. Insulation Resistance: 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. Voltage Drop: Rated Current x Rdc.
9. DC Resistance: See Table.
10. Temperature Rise: +25°C maximum.
11. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
12. Equivalent to MIL-F-28861/4.

MAXWELL PART NUMBER	Circuit	Max. Current (A)	Min. Cap (μF)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
					30 KHz	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
4131-C_2-03S	L1	0.1	.70	1.7	20	41	48	60	70	70	70
4130-C_2-03S	L2	0.1	.70	1.7	20	41	48	60	70	70	70
4140-C_2-03S	Pi	0.1	1.4	1.7	36	69	79	80	80	80	80
4131-C_2-06S	L1	0.3	.70	.77	15	35	42	54	70	70	70
4130-C_2-06S	L2	0.3	.70	.77	15	35	42	54	70	70	70
4140-C_2-06S	Pi	0.3	1.4	.77	29	62	73	80	80	80	80
4131-C_2-08S	L1	0.5	.70	.36	12	29	36	48	69	70	70
4130-C_2-08S	L2	0.5	.70	.36	12	29	36	48	69	70	70
4140-C_2-08S	Pi	0.5	1.4	.36	21	56	67	80	80	80	80
4131-C_2-09S	L1	1.0	.70	.14	11	21	26	36	55	70	70
4130-C_2-09S	L2	1.0	.70	.14	11	21	26	36	55	70	70
4140-C_2-09S	Pi	1.0	1.4	.14	--	46	57	75	80	80	80
4131-C_2-11S	L1	3.0	.70	.05	10	20	24	31	45	70	70
4130-C_2-11S	L2	3.0	.70	.05	10	20	24	31	45	70	70
4140-C_2-11S	Pi	3.0	1.4	.05	--	17	36	51	80	80	80
4131-C_2-13S	L1	5.0	.70	.015	--	14	17	24	36	60	70
4130-C_2-13S	L2	5.0	.70	.015	--	14	17	24	36	60	70
4140-C_2-13S	Pi	5.0	1.4	.015	--	--	16	38	75	80	80

COAXIAL BROADBAND EMI FILTERS

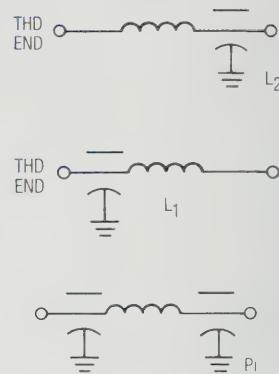
L AND Pi-SECTIONS

MAXWELL
SIERRA CAPACITOR/FILTER Division

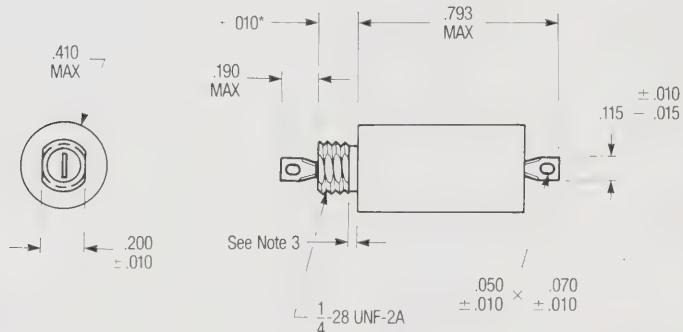
APPLICATIONS:

Standard L filters are used where circuit source impedance is low and the circuit load impedance is high. The inductor faces the source and the capacitor faces the load. Typical interfering source low impedances (voltage generator) are relay and switch contacts, SCR controls and rectifiers. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, long signal lines, line stabilization networks and transformer powered equipment. Reversed L filters are used when the circuit source impedance is high and the circuit load impedance is low. The inductor faces the load and the capacitor faces the source. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, long ac power lines and power supply-transformer inputs. Typical load low impedances (current sensitive) are current sensitive relays and solenoids and high current resistive or capacitive loads.

Pi filters are used where circuit source and load impedances are high or vary from low to high. Typical interfering source high impedances (current generator) are ac induction motors, relay coils, series dc motors, conventional long ac power lines and power supply-transformer input. Typical load high impedances (voltage sensitive) are voltage sensitive relays and solenoids, transformer powered equipment, long signal lines and line stabilization networks. CAUTION: Do not use Pi filters where arcing (contacts) or high transient waveforms are present. Passband attenuation may go positive making the noise problems more severe than without the filter present. This is called "ringing" and is the tendency of the filter to actually oscillate.



CIRCUIT DIAGRAMS



NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .050 inches maximum.
4. One imperfect thread allowed .035 inches maximum.

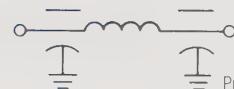
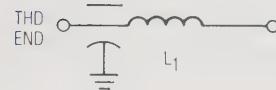
GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Voltage:** 200 VDC/125VAC 0-400Hz.
3. **Rated Current:** See Table.
4. **Capacitance Tolerance:** -0, +100 percent.
5. **Dissipation Factor:** 3.0 percent, maximum.
6. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
7. **Insulation Resistance:** 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. **Voltage Drop:** Rated Current x Rdc.
9. **DC Resistance:** See Table.
10. **Temperature Rise:** +25°C maximum.
11. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
12. **Equivalent to MIL-F-28861/5.**

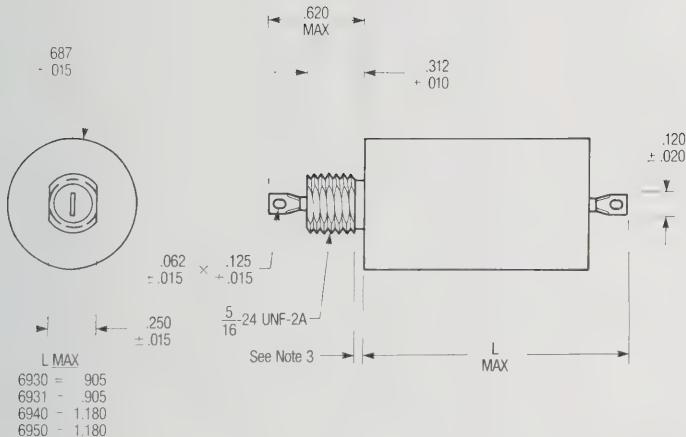
MAXWELL PART NUMBER	Circuit	Max. Current (A)	Min. Cap (μF)	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)						
					30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
4135-N_2-05S	L1	.25	.15	1.5	22	28	40	60	60	60	70
4134-N_2-05S	L2	.25	.15	1.5	22	28	40	60	60	60	70
4141-N_2-05S	Pi	.25	.30	1.5	34	44	62	80	80	80	80
4135-N_2-09S	L1	1.0	.15	.25	8	13	24	45	60	60	70
4134-N_2-09S	L2	1.0	.15	.25	8	13	24	45	60	60	70
4141-N_2-09S	Pi	1.0	.30	.25	18	32	40	80	80	80	80
4135-N_2-11S	L1	3.0	.15	.05	5	8	16	30	60	60	70
4134-N_2-11S	L2	3.0	.15	.05	5	8	16	30	60	60	70
4141-N_2-11S	Pi	3.0	.30	.05	--	--	19	59	80	80	80
4135-N_2-13S	L1	5.0	.15	.015	5	8	14	26	55	55	70
4134-N_2-13S	L2	5.0	.15	.015	5	8	14	26	55	55	70
4141-N_2-13S	Pi	5.0	.30	.015	--	--	--	51	80	80	80

COAXIAL BROADBAND EMI FILTERS L, PI AND T-SECTIONS

MAXWELL
SIERRA CAPACITOR/FILTER Division



CIRCUIT DIAGRAMS



NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
3. Imperfect thread or undercut optional .062 inches maximum.
4. One imperfect thread allowed .035 inches maximum.

GENERAL SPECIFICATIONS:

1. Operating Temperature Range: -55°C to +125°C.
2. Rated Voltage: 100VDC.
3. Rated Current: See Table.
4. Insulation Resistance: 700 megohms minimum, at +25°C. +125°C = 10 percent of +25°C value.
5. Voltage Drop: Rated Current x Rdc.
6. DC Resistance: See Table.
7. Temperature Rise: +25°C maximum.
8. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
9. Equivalent to MIL-F-15733/67.

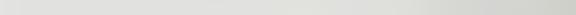
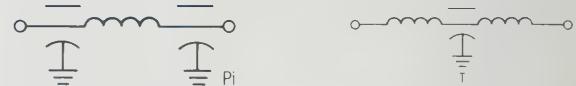
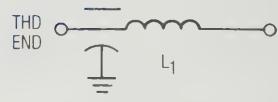
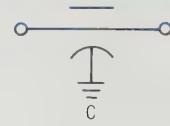
MAXWELL PART NUMBER	Max. Idc (A)	Circuit	Max. Rdc (Ω)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)					
				75 KHz	150 KHz	300 KHz	1 MHz	10 MHz	1 GHz
6930-DR2-08S	.5	L2	.3	35	48	60	70	70	70
6931-DR2-08S	.5	L1	.3	35	48	60	70	70	70
6930-DR2-09S	1.0	L2	.21	30	40	52	70	70	70
6931-DR2-09S	1.0	L1	.21	30	40	52	70	70	70
6930-DR2-11S	3.0	L2	.03	20	29	37	55	70	70
6931-DR2-11S	3.0	L1	.03	20	29	37	55	70	70
6930-DR2-13S	5.0	L2	.007	20	29	34	47	70	70
6931-DR2-13S	5.0	L1	.007	20	29	34	47	70	70
6940-DR2-08S	.5	Pi	.3	55	75	80	80	80	80
6940-DR2-09S	1.0	Pi	.21	52	69	80	80	80	80
6940-DR2-11S	3.0	Pi	.03	26	48	66	80	80	80
6940-DR2-13S	5.0	Pi	.02	15	38	58	80	80	80
6950-DR2-10S	2.0	T	.16	16	40	50	70	70	70

COAXIAL BROADBAND EMI FILTERS

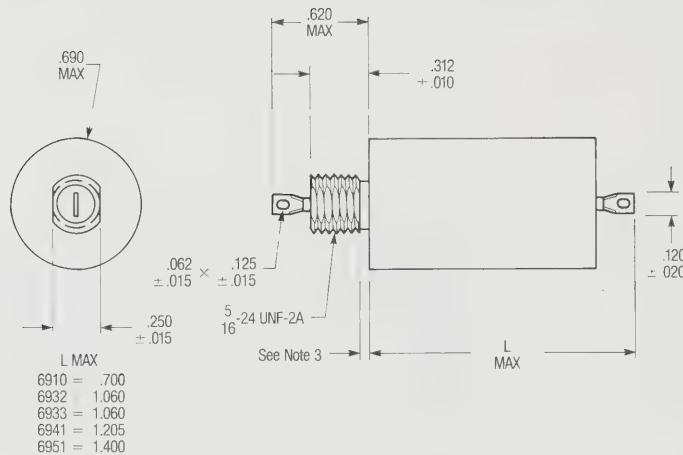
C, L, PI AND T-SECTIONS

AC LINE, 0-400 Hz

MAXWELL
SIERRA CAPACITOR/FILTER Division



CIRCUIT DIAGRAMS



NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
 3. Imperfect thread or undercut optional .062 inches maximum.
 4. One imperfect thread allowed .035 inches maximum.

GENERAL SPECIFICATIONS:

- Operating Temperature: -55°C to +125°C.
- Rated Voltage: 400VDC/230VAC 0-400Hz.
- Rated Current: See Table.
- Capacitance Tolerance: -0, +100 percent.
- Dissipation Factor: 3.0 percent, maximum.
- Voltage and Temperature Limits of Capacitance: +15, -40 percent.
- Insulation Resistance: 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
- Voltage Drop: See Table.
- DC Resistance: See Table.
- Temperature Rise: +25°C maximum.
- Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
- Equivalent to MIL-F-28861/16.

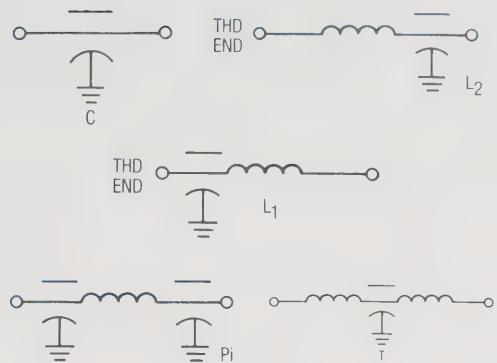
MAXWELL PART NUMBER	Circuit	Max. Idc (A)	Min. Cap (μF)	Max. L (in)	Max. Rdc (Ω)	MAX. VOLTAGE DROP (VOLTS)		MINIMUM FULL LOAD INSERTION LOSS <u>1</u> / -55°C TO +125°C PER MIL-STD-220 (dB)						
						ac (rms)	dc	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
6910-RR2-154S	C	15.0	.15	.700	.008	.14	.12	7	10	16	26	40	52	70
6933-RR2-08S	L1	.5	.15	1.060	.33	.47	.165	18	24	32	50	60	60	70
6932-RR2-08S	L2	.5	.15	1.060	.33	.47	.165	18	24	32	50	60	60	70
6933-RR2-09S	L1	1.0	.15	1.060	.15	.47	.15	12	19	30	46	60	60	70
6932-RR2-09S	L2	1.0	.15	1.060	.15	.47	.15	12	19	30	46	60	60	70
6933-RR2-11S	L1	3.0	.15	1.060	.026	.32	.078	7	11	19	36	60	60	70
6932-RR2-11S	L2	3.0	.15	1.060	.026	.32	.078	7	11	19	36	60	60	70
6933-RR2-13S	L1	5.0	.15	1.060	.013	.21	.065	7	10	16	28	54	60	70
6932-RR2-13S	L2	5.0	.15	1.060	.013	.21	.065	7	10	16	28	54	60	70
6933-RR2-15S	L1	10.0	.15	1.060	.008	.12	.08	7	10	16	25	48	60	70
6932-RR2-15S	L2	10.0	.15	1.060	.008	.12	.08	7	10	16	25	48	60	70
6941-RR2-08S	Pi	.5	.20	1.205	.33	.47	.165	24	34	52	80	80	80	80
6941-RR2-09S	Pi	1.0	.20	1.205	.15	.47	.15	16	27	46	74	80	80	80
6941-RR2-11S	Pi	3.0	.20	1.205	.026	.32	.078	--	--	30	60	80	80	80
6941-RR2-13S	Pi	5.0	.20	1.205	.013	.21	.065	--	--	12	50	80	80	80
6941-RR2-15S	Pi	10.0	.20	1.205	.008	.12	.08	--	--	30	80	80	80	80
6951-RR2-09S	T	1.0	.15	1.400	.052	.21	.052	6	12	25	46	60	60	70
6951-RR2-10S	T	2.0	.15	1.400	.038	.22	.076	6	10	18	38	58	60	70
6951-RR2-12S	T	4.0	.15	1.400	.026	.32	.104	6	10	16	30	50	60	70

COAXIAL BROADBAND EMI FILTERS

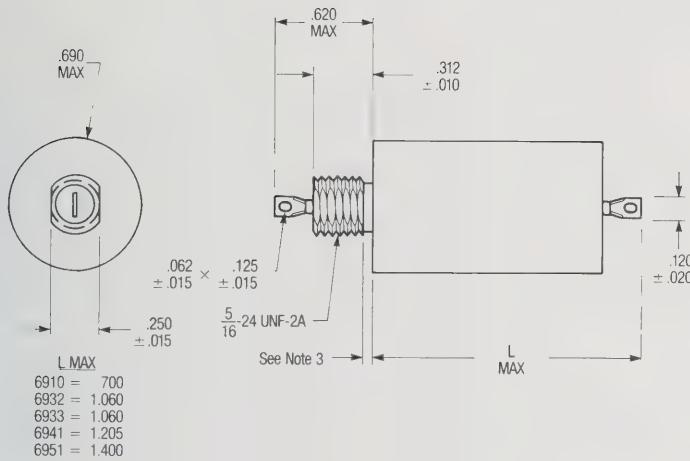
C, L, Pi AND T-SECTIONS

AC LINE, 0-400 Hz

MAXWELL
SIERRA CAPACITOR/FILTER Division



CIRCUIT DIAGRAMS



- NOTES:**
1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 2 - electro-tin. Tin-lead, gold and silver also available.
 3. Imperfect thread or undercut optional .062 inches maximum.
 4. One imperfect thread allowed .035 inches maximum.

GENERAL SPECIFICATIONS:

1. Operating Temperature Range: -55°C to +125°C.
2. Rated Voltage: 300VDC/230VAC 0-400Hz.
3. Rated Current: See Table.
4. Capacitance Tolerance: -0, +100 percent.
5. Dissipation Factor: 3.0 percent, maximum.
6. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
7. Insulation Resistance: 1000 megohm-microfarad or 10000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. Voltage Drop: See Table.
9. DC Resistance: See Table.
10. Temperature Rise: +25°C maximum.
11. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50mA maximum charging current.
12. Equivalent To: MIL-F-28861/17.

MAXWELL PART NUMBER	Circuit	Max. I _{dc} (A)	Min. Cap (μF)	Max. L (in)	Max. R _{dc} (Ω)	MAX. VOLTAGE DROP (VOLTS)		MINIMUM FULL LOAD INSERTION LOSS <u>2</u> / -55°C TO +125°C PER MIL-STD-220 (dB)						
						ac (rms)	dc	100 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
6910-PR2-304S	C	15.0	.30	.700	.008	.14	.12	13	16	22	32	40	58	70
6933-PR2-08S	L1	.5	.30	1.060	.33	.47	.165	23	28	40	60	60	60	70
6932-PR2-08S	L2	.5	.30	1.060	.33	.47	.165	23	28	40	60	60	60	70
6933-PR2-09S	L1	1.0	.30	1.060	.15	.47	.15	18	24	37	56	60	60	70
6932-PR2-09S	L2	1.0	.30	1.060	.15	.47	.15	18	24	37	56	60	60	70
6933-PR2-11S	L1	3.0	.30	1.060	.026	.32	.078	13	17	24	42	60	60	70
6932-PR2-11S	L2	3.0	.30	1.060	.026	.32	.078	13	17	24	42	60	60	70
6933-PR2-13S	L1	5.0	.30	1.060	.013	.21	.065	13	16	22	34	60	60	70
6932-PR2-13S	L2	5.0	.30	1.060	.013	.21	.065	13	16	22	34	60	60	70
6933-PR2-15S	L1	10.0	.30	1.060	.008	.12	.08	13	16	20	30	56	60	70
6932-PR2-15S	L2	10.0	.30	1.060	.008	.12	.08	13	16	20	30	56	60	70
6941-PR2-08S	Pi	.5	.36	1.205	.33	.47	.165	34	44	62	80	80	80	80
6941-PR2-09S	Pi	1.0	.36	1.205	.15	.47	.15	26	37	56	80	80	80	80
6941-PR2-11S	Pi	3.0	.36	1.205	.026	.32	.078	--	18	40	70	80	80	80
6941-PR2-13S	Pi	5.0	.36	1.205	.013	.21	.065	--	--	25	60	80	80	80
6941-PR2-15S	Pi	10.0	.36	1.205	.008	.12	.08	--	--	--	50	80	80	80
6951-PR2-09S	T	1.0	.30	1.400	.052	.21	.052	13	18	28	48	60	60	70
6951-PR2-10S	T	2.0	.30	1.400	.038	.22	.076	12	16	22	37	56	60	70
6951-PR2-12S	T	4.0	.30	1.400	.026	.32	.104	12	16	20	34	54	60	70

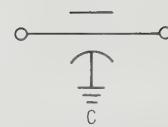
COAXIAL HIGH FREQUENCY EMI FILTERS

C AND L-SECTION 4-40 BOLT STYLE

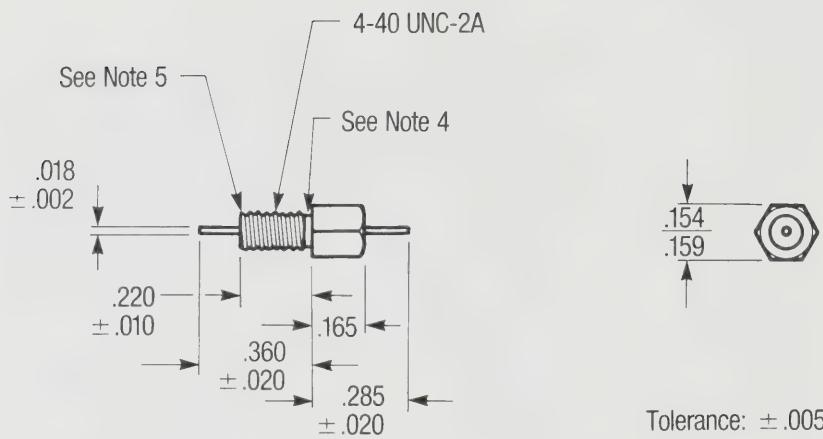


APPLICATIONS:

C-Section filters are used in circuits where both source and load impedances are high. Use on low impedance circuits will significantly reduce the filter's performance. L-Section filters are used when the interfering source has a low or varying impedance. The discoidal multi-layer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications are communication equipment, measuring and test equipment, microwave repeaters and for RF bypassing to ground. Capacitance values up to 1500 pF are ideal for MHz high speed switching applications.



C-SECTION CIRCUIT



HERMETIC SEALS

- NOTES:**
1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 4 - silver plate. Electro tin fused and gold also available.
 3. Standard lead is $.018 \pm .002$ silver plated alloy 52 material.
 4. One and one-half imperfect threads allowed .030 inch maximum.
 5. One imperfect thread allowed .030 inch maximum.



L-SECTION CIRCUIT

GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to $+125^{\circ}\text{C}$.
2. Rated Voltage: See Table.
3. Rated Current: 3 amperes, maximum.
4. Capacitance Tolerance: $-0, +100$ percent.
5. Dissipation Factor: 3.0 percent, maximum.
6. Voltage and Temperature Limits of Capacitance: $+15, -40$ percent.
7. Insulation Resistance: 1000 megohms minimum, at $+25^{\circ}\text{C}$. $+125^{\circ}\text{C} = 10$ percent of $+25^{\circ}\text{C}$ value.
8. Voltage Drop: .06 volt, maximum.
9. DC Resistance: 0.02 ohm, maximum.
10. Temperature Rise: $+25^{\circ}\text{C}$ maximum.
11. Dielectric Withstanding Voltage: $2.5 \times$ rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO $+125^{\circ}\text{C}$ PER MIL-STD-220 (dB)					
				1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
5020-BE4-102S	C	50	.001	--	4	20	25	40	50
5040-BE4-102S	L	50	.001	--	4	20	25	40	50
5020-BE4-103S	C	50	.01	4	21	35	40	55	60
5040-BE4-103S	L	50	.01	4	21	35	40	55	60
5020-BE4-503S	C	50	.05	15	35	44	50	70	70
5040-BE4-503S	L	50	.05	15	35	44	50	70	70
5020-DE4-102S	C	100	.001	--	4	20	25	40	50
5040-DE4-102S	L	100	.001	--	4	20	25	40	50
5020-DE4-152S	C	100	.0015	--	5	24	30	44	50
5040-DE4-152S	L	100	.0015	--	5	24	30	44	50
5020-DE4-453S	C	100	.045	14	34	44	50	70	70
5040-DE4-453S	L	100	.045	14	34	44	50	70	70
5020-FE4-102S	C	200	.001	--	4	20	25	40	50
5040-FE4-102S	L	200	.001	--	4	20	25	40	50
5020-FE4-153S	C	200	.015	6	24	40	45	55	60
5040-FE4-153S	L	200	.015	6	24	40	45	55	60

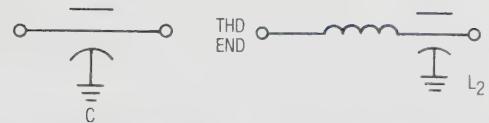
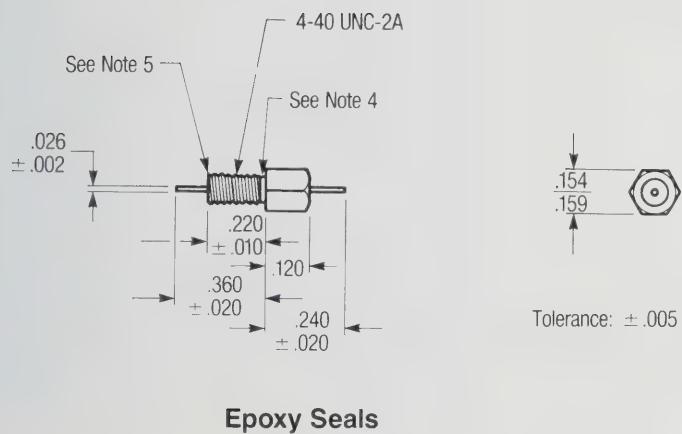
COAXIAL HIGH FREQUENCY EMI FILTERS

C AND L-SECTION 4-40 BOLT STYLE

MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

C-Section filters are used in circuits where both source and load impedances are high. Use on low impedance circuits will significantly reduce the filter's performance. L-Section filters are used when the interfering source has a low or varying impedance. The discoidal multi-layer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications are communication equipment, measuring and test equipment, microwave repeaters and for RF bypassing to ground. Capacitance values up to 1500 pF are ideal for MHz high speed switching applications.



GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to +125°C.
2. Rated Voltage: See Table.
3. Rated Current: 5 amperes, maximum.
4. Capacitance Tolerance: -0, +100 percent.
5. Dissipation Factor: 3.0 percent, maximum.
6. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
7. Insulation Resistance: 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
8. Voltage Drop: 0.1 volt, maximum.
9. DC Resistance: 0.02 ohm, maximum.
10. Temperature Rise: +25°C maximum.
11. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
12. Equivalent To: MIL-F-28861/6.

- NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 4 - silver plate. Electro-tin fused and gold also available.
 3. Standard lead is .026 ± .002 silver plated copper.
 Other lead diameters available upon request.
 4. One and one-half imperfect threads allowed .030 inch maximum.
 5. One imperfect thread allowed .030 inch maximum.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)					
				1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
5010-DB4-273S	C	100	.027	8	28	39	44	64	70
5030-DB4-273S	L	100	.027	8	28	39	44	64	70
5030-DB4-453S	L	100	.045	14	34	44	50	70	70
5010-FB4-102S	C	200	.001	--	4	20	25	40	50
5010-FB4-502S	C	200	.005	--	15	34	40	45	50
5010-FB4-103S	C	200	.01	4	21	35	40	55	60
5030-FB4-103S	L	200	.01	4	21	35	40	55	60

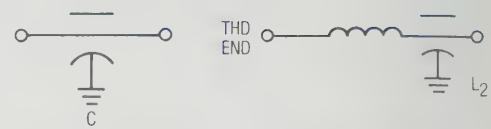
COAXIAL HIGH FREQUENCY EMI FILTERS

C, L AND PI-SECTION 8-32 BOLT STYLE

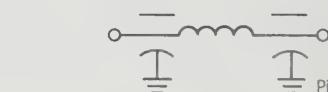
APPLICATIONS:

C-Section filters are used in circuits where both source and load impedances are high. Use on low impedance circuits will significantly reduce the filter's performance. L-Section filters are used when the interfering source has a low or varying impedance. The discoidal multi-layer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications are communication equipment, measuring and test equipment, microwave repeaters and for RF bypassing to ground. Capacitance values up to 1500 pF are ideal for MHz high speed switching applications.

Pi-Section bolt style filters are the most effective when used on high source and load impedance circuits. The discoidal multilayer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications include radar, amplifiers, telemetry, telecommunications, satellite communication transmissions and RF switches. Pi filters using discoidal ceramics exhibit normal network resonance in the 10-30 MHz range whereas tubular ceramic Pi filters experience parallel resonances from 50 MHz to 500 MHz.

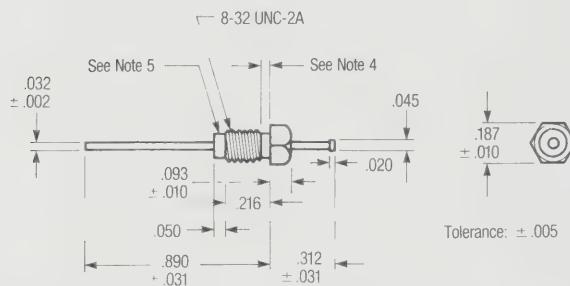


C-SECTION CIRCUIT



L-SECTION CIRCUIT

Pi-SECTION CIRCUIT



EPOXY SEALS

- NOTES:**
1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 4 - silver plate. Electro-tin fused and gold also available.
 3. Standard lead is $.032 \pm .002$ silver plated copper. Other lead diameters and materials available on request.
 4. Imperfect thread or undercut .040 inches maximum.
 5. One imperfect thread allowed .040 inches maximum.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to $+125^{\circ}\text{C}$.
2. **Rated Current:** 10 amperes, maximum.
3. **Capacitance Tolerance:** $-0, +100$ percent.
4. **Dissipation Factor:** 3.0 percent, maximum.
5. **Voltage and Temperature Limits of Capacitance:** $+15, -40$ percent.
6. **Insulation Resistance:** 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at $+25^{\circ}\text{C}$. $+125^{\circ}\text{C} = 10$ percent of $+25^{\circ}\text{C}$ value.
7. **Voltage Drop:** 0.1 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** $+25^{\circ}\text{C}$ maximum.
10. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/7.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO $+125^{\circ}\text{C}$ PER MIL-STD-220 (dB)					
				1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
5210-BB4-503S	C	50	.05	15	35	42	50	70	70
5230-BB4-503S	L	50	.05	15	35	42	50	70	70
5250-BB4-323S	Pi	50	.032	12	30	60	70	70	70
5210-DB4-103S	C	100	.01	4	21	35	40	55	60
5230-DB4-103S	L	100	.01	4	21	35	40	55	60
5250-DB4-123S	Pi	100	.012	--	12	60	70	70	70
5210-DB4-273S	C	100	.027	8	28	39	44	64	70
5230-DB4-273S	L	100	.027	8	28	39	44	64	70
5250-DB4-203S	Pi	100	.02	4	24	60	70	70	70
5210-FB4-102S	C	200	.001	--	4	20	25	40	50
5230-FB4-102S	L	200	.001	--	4	20	25	40	50
5250-FB4-202S	Pi	200	.002	--	8	42	58	70	70
5210-FB4-502S	C	200	.005	--	15	34	40	45	50
5230-FB4-502S	L	200	.005	--	15	34	40	45	50
5250-FB4-502S	Pi	200	.005	--	10	55	70	70	70

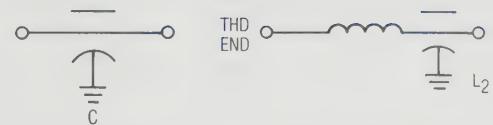
COAXIAL HIGH FREQUENCY EMI FILTERS

C, L AND Pi-SECTION 8-32 BOLT STYLE

APPLICATIONS:

C-Section filters are used in circuits where both source and load impedances are high. Use on low impedance circuits will significantly reduce the filter's performance. L-Section filters are used when the interfering source has a low or varying impedance. The discoidal multi-layer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications are communication equipment, measuring and test equipment, microwave repeaters and for RF bypassing to ground. Capacitance values up to 1500 pF are ideal for MHz high speed switching applications.

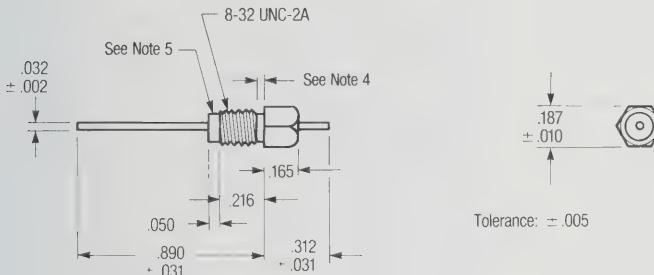
Pi-Section bolt style filters are the most effective when used on high source and load impedance circuits. The discoidal multilayer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications include radar, amplifiers, telemetry, telecommunications, satellite communication transmissions and RF switches. Pi filters using discoidal ceramics exhibit normal network resonance in the 10-30 MHz range whereas tubular ceramic Pi filters experience parallel resonances from 50 MHz to 500 MHz.



C-SECTION CIRCUIT L-SECTION CIRCUIT



PI-SECTION CIRCUIT



HERMETIC SEALS

NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 4 - silver plate. Electro-tin fused and gold also available.
3. Standard lead is $.032 \pm .002$ silver plated copper. Other lead diameters and materials available on request.
4. Imperfect thread or undercut .040 inches maximum.
5. One imperfect thread allowed .040 inches maximum.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to $+125^{\circ}\text{C}$.
2. **Rated Current:** 10 amperes, maximum.
3. **Capacitance Tolerance:** $-0, +100$ percent.
4. **Dissipation Factor:** 3.0 percent, maximum.
5. **Voltage and Temperature Limits of Capacitance:** $+15, -40$ percent.
6. **Insulation Resistance:** 1000 megohms minimum, at $+25^{\circ}\text{C}$. $+125^{\circ}\text{C} = 10$ percent of $+25^{\circ}\text{C}$ value.
7. **Voltage Drop:** 0.1 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** $+25^{\circ}\text{C}$ maximum.
10. **Dielectric Withstanding Voltage:** $2.5 \times$ rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/8.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO $+125^{\circ}\text{C}$ PER MIL-STD-220 (dB)					
				1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
5220-BB4-503S	C	50	.05	15	35	42	50	70	70
5240-BB4-503S	L	50	.05	15	35	42	50	70	70
5260-BB4-323S	Pi	50	.032	12	30	60	70	70	70
5220-DB4-103S	C	100	.01	4	21	35	40	55	60
5240-DB4-103S	L	100	.01	4	21	35	40	55	60
5260-DB4-123S	Pi	100	.012	--	12	60	70	70	70
5220-DB4-273S	C	100	.027	8	28	39	44	64	70
5240-DB4-273S	L	100	.027	8	28	39	44	64	70
5260-DB4-203S	Pi	100	.02	4	24	60	70	70	70
5220-FB4-102S	C	200	.001	--	4	20	25	40	50
5240-FB4-102S	L	200	.001	--	4	20	25	40	50
5260-FB4-202S	Pi	200	.002	--	8	42	58	70	70
5220-FB4-502S	C	200	.005	--	15	34	40	45	50
5240-FB4-502S	L	200	.005	--	15	34	40	45	50
5260-FB4-502S	Pi	200	.005	--	10	55	70	70	70

COAXIAL HIGH FREQUENCY EMI FILTERS

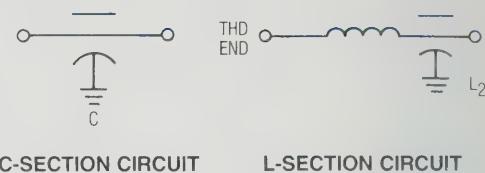
C, L AND PI-SECTION 12-32 BOLT STYLE



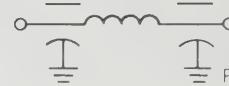
APPLICATIONS:

C-Section filters are used in circuits where both source and load impedances are high. Use on low impedance circuits will significantly reduce the filter's performance. L-Section filters are used when the interfering source has a low or varying impedance. The discoidal multi-layer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications are communication equipment, measuring and test equipment, microwave repeaters and for RF bypassing to ground. Capacitance values up to 1500 pF are ideal for MHz high speed switching applications.

Pi-Section bolt style filters are the most effective when used on high source and load impedance circuits. The discoidal multilayer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications include radar, amplifiers, telemetry, telecommunications, satellite communication transmissions and RF switches. Pi filters using discoidal ceramics exhibit normal network resonance in the 10-30 MHz range whereas tubular ceramic Pi filters experience parallel resonances from 50 MHz to 500 MHz.



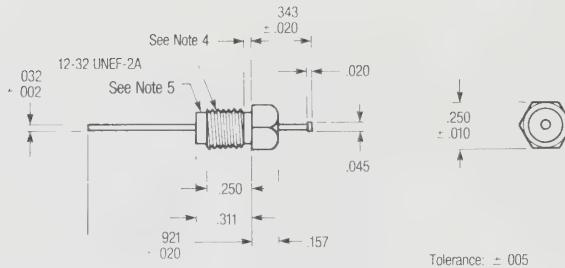
C-SECTION CIRCUIT



L-SECTION CIRCUIT



Pi-SECTION CIRCUIT



EPOXY SEALS

NOTES:

1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 4 - silver plate. Electro-tin fused and gold also available.
3. Standard lead is $.032 \pm .002$ silver plated copper. Other lead diameters and materials available on request.
4. Imperfect thread or undercut .040 inches maximum.
5. One imperfect thread allowed .040 inches maximum.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to $+125^{\circ}\text{C}$.
2. **Rated Current:** 10 amperes, maximum.
3. **Capacitance Tolerance:** $-0, +100$ percent.
4. **Dissipation Factor:** 3.0 percent, maximum.
5. **Voltage and Temperature Limits of Capacitance:** $+15, -40$ percent.
6. **Insulation Resistance:** 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at $+25^{\circ}\text{C}$. $+125^{\circ}\text{C} = 10$ percent of $+25^{\circ}\text{C}$ value.
7. **Voltage Drop:** 0.1 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** $+25^{\circ}\text{C}$ maximum.
10. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/9.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO $+125^{\circ}\text{C}$ PER MIL-STD-220 (dB)					
				1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
5510-BB4-204S	C	50	.2	26	36	52	60	70	70
5530-BB4-204S	L	50	.2	26	36	52	60	70	70
5550-BB4-124S	Pi	50	.12	20	34	60	70	70	70
5510-DB4-104S	C	100	.10	20	38	48	53	70	70
5530-DB4-104S	L	100	.10	20	38	48	53	70	70
5550-DB4-753S	Pi	100	.075	8	33	60	70	70	70
5510-DB4-503S	C	100	.05	15	35	42	50	70	70
5530-DB4-503S	L	100	.05	15	35	42	50	70	70
5550-DB4-503S	Pi	100	.05	10	28	60	70	70	70
5510-FB4-502S	C	200	.005	--	15	34	40	45	50
5530-FB4-502S	L	200	.005	--	15	34	40	45	50
5550-FB4-123S	Pi	200	.012	--	12	60	70	70	70
5510-NB4-102S	C	200/125Vac	.001	--	4	20	25	40	50
5530-NB4-102S	L	200/125Vac	.001	--	4	20	25	40	50
5510-NB4-103S	C	200/125Vac	.01	4	21	35	40	55	60
5530-NB4-103S	L	200/125Vac	.01	4	21	35	40	55	60

COAXIAL HIGH FREQUENCY EMI FILTERS

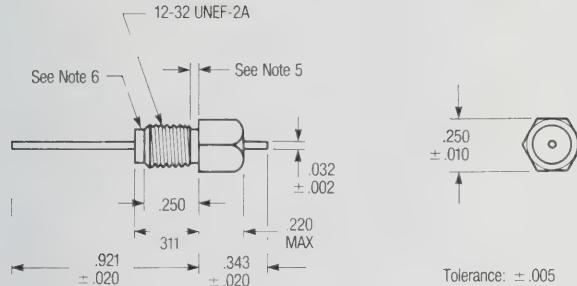
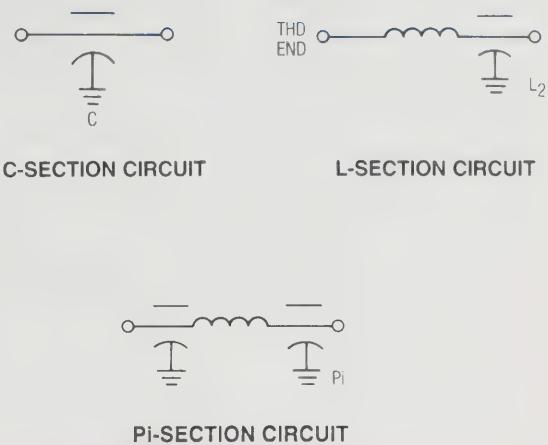
C, L AND PI-SECTION 12-32 BOLT STYLE



APPLICATIONS:

C-Section filters are used in circuits where both source and load impedances are high. Use on low impedance circuits will significantly reduce the filter's performance. L-Section filters are used when the interfering source has a low or varying impedance. The discoidal multi-layer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications are communication equipment, measuring and test equipment, microwave repeaters and for RF bypassing to ground. Capacitance values up to 1500 pF are ideal for MHz high speed switching applications.

Pi-Section bolt style filters are the most effective when used on high source and load impedance circuits. The discoidal multilayer construction completely isolates the input from the output making these filters effective at very high frequencies. Typical applications include radar, amplifiers, telemetry, telecommunications, satellite communication transmissions and RF switches. Pi filters using discoidal ceramics exhibit normal network resonance in the 10-30 MHz range whereas tubular ceramic Pi filters experience parallel resonances from 50 MHz to 500 MHz.



- NOTES:**
1. For complete part number designations and codes, see pages 28 & 29.
 2. Standard finish is code 4 - silver plate. Gold plate is also available.
 3. Standard lead is $.032 \pm .002$ silver plated copper. Other lead diameters and materials available on request.
 4. Imperfect thread or undercut .040 inches maximum.
 5. One imperfect thread allowed .040 inches maximum.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to $+125^{\circ}\text{C}$.
2. **Rated Current:** 10 amperes, maximum.
3. **Capacitance Tolerance:** $-0, +100$ percent.
4. **Dissipation Factor:** 3.0 percent, maximum.
5. **Voltage and Temperature Limits of Capacitance:** $+15, -40$ percent.
6. **Insulation Resistance:** 1000 megohms minimum, at $+25^{\circ}\text{C}$. $+125^{\circ}\text{C} = 10$ percent of $+25^{\circ}\text{C}$ value.
7. **Voltage Drop:** 0.1 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** $+25^{\circ}\text{C}$ maximum.
10. **Dielectric Withstanding Voltage:** $2.5 \times$ rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/10.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO $+125^{\circ}\text{C}$ PER MIL-STD-220 (dB)					
				1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
5520-BB4-204S	C	50	.2	26	36	52	60	70	70
5540-BB4-204S	L	50	.2	26	36	52	60	70	70
5560-BB4-124S	Pi	50	.12	20	34	60	70	70	70
5520-DB4-104S	C	100	.10	20	38	48	53	70	70
5540-DB4-104S	L	100	.10	20	38	48	53	70	70
5560-DB4-753S	Pi	100	.075	8	33	60	70	70	70
5520-DB4-503S	C	100	.05	15	35	42	50	70	70
5540-DB4-503S	L	100	.05	15	35	42	50	70	70
5560-DB4-503S	Pi	100	.05	10	28	60	70	70	70
5520-FB4-502S	C	200	.005	--	15	34	40	45	50
5540-FB4-502S	L	200	.005	--	15	34	40	45	50
5560-FB4-123S	Pi	200	.012	--	12	60	70	70	70
5520-NB4-102S	C	200/125Vac	.001	--	4	20	25	40	50
5540-NB4-102S	L	200/125Vac	.001	--	4	20	25	40	50
5520-NB4-103S	C	200/125Vac	.01	4	21	35	40	55	60
5540-NB4-103S	L	200/125Vac	.01	4	21	35	40	55	60

COAXIAL HIGH FREQUENCY EMI FILTERS C AND L-SECTION SOLDER-IN STYLES

MAXWELL
SIERRA CAPACITOR/FILTER Division

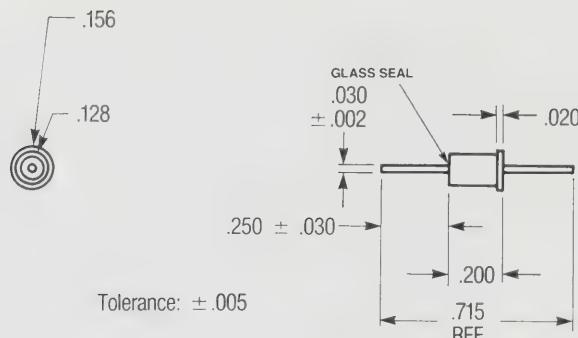
APPLICATIONS:

For high frequency solder-in applications where glass seal hermeticity is required on one end only. These filters, with improved reliability, will operate continuously at +150°C and will withstand +300°C installation temperature. Excellent EMI suppression from 10 MHz to 10 GHz.

FIG. 1



FIG. 2



For glass seal at flange end:

1. Substitute 1212 for 1210 in part number for "C" filters.
2. Substitute 1232 for 1230 in part number for "L" filters.

NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 7 - gold plate per MIL-G-45204, Type III, Class 1.
Silver plate per QQ-S-365, Type III, Grade B also available.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +150°C.
2. **Rated Current:** 5 amperes, maximum.
(10 amperes current rating available upon request)
3. **Capacitance Tolerance:** Guaranteed minimum value.
4. **Dissipation Factor:** 0.2 percent maximum 10pF thru 100pF. 3.0 percent maximum over 100 pF.
5. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
6. **Insulation Resistance:** 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. **Voltage Drop:** 0.05 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** +25°C maximum.
10. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second.
50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/12.

MAXWELL PART NUMBER	Circuit	Figure	Working Voltage (dc)	Min. Cap (pF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)				
					1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
1210-BE7-153S	C	1	50	15,000	7	25	40	60	60
1230-BE7-153S	L	2	50	15,000	7	25	40	60	60
1210-BE7-103S	C	1	50	10,000	4	20	35	50	60
1230-BE7-103S	L	2	50	10,000	4	20	35	50	60
1210-DE7-502S	C	1	100	5,000	--	15	30	50	60
1230-DE7-502S	L	2	100	5,000	--	15	30	50	60
1210-DE7-272S	C	1	100	2,700	--	10	25	50	60
1230-DE7-272S	L	2	100	2,700	--	10	25	50	60
1210-FE7-102S	C	1	200	1,000	--	4	20	40	55
1230-FE7-102S	L	2	200	1,000	--	4	20	40	55
1210-FE7-501S	C	1	200	500	--	--	15	34	50
1230-FE7-501S	L	2	200	500	--	--	15	34	50
1210-FE7-101S	C	1	200	100	--	--	3	20	40
1230-FE7-101S	L	2	200	100	--	--	3	20	40
1210-FE7-100S	C	1	200	10	--	--	--	5	20
1230-FE7-100S	L	2	200	10	--	--	--	5	20

COAXIAL HIGH FREQUENCY EMI FILTERS

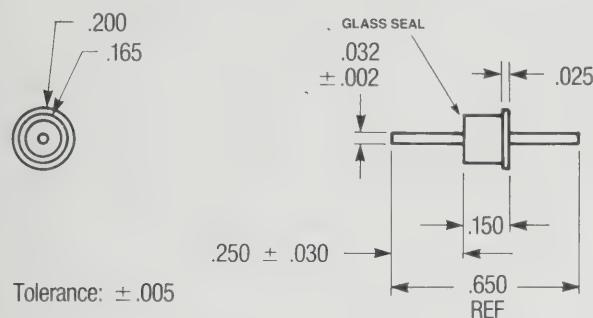
C AND L-SECTION SOLDER-IN STYLES



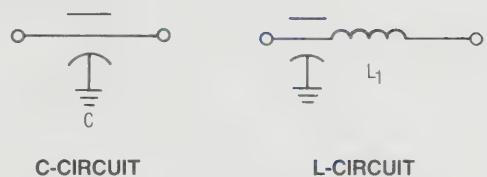
APPLICATIONS:

For high frequency solder-in applications where glass seal hermeticity is required on one end only. These filters, with improved reliability, will operate continuously at +150°C and will withstand +300°C installation temperature. Excellent EMI suppression from 10 MHz to 10 GHz.

FIG. 1



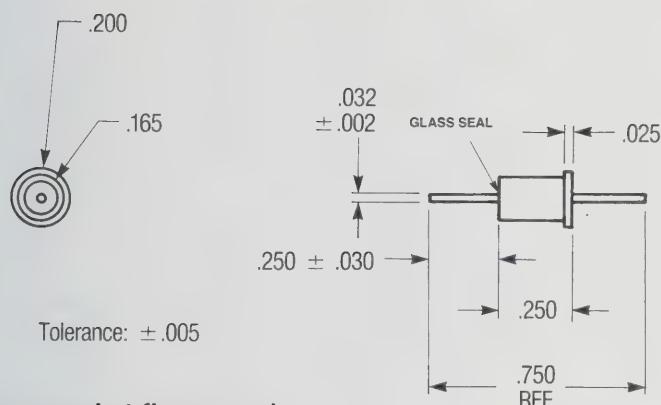
Tolerance: ± .005



C-CIRCUIT

L-CIRCUIT

FIG. 2



Tolerance: ± .005

For glass seal at flange end:

1. Substitute 1612 for 1610 in part number for "C" filters.
2. Substitute 1632 for 1630 in part number for "L" filters.

NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 7 - gold plate per MIL-G-45204, Type III, Class 1.
Silver plate per QQ-S-365, Type III, Grade B also available.

GENERAL SPECIFICATIONS:

1. Operating Temperature: -55°C to +150°C.
2. Rated Current: 5 amperes, maximum.
3. Capacitance Tolerance: Guaranteed minimum value.
4. Dissipation Factor: 3.0 percent maximum.
5. Voltage and Temperature Limits of Capacitance: +15, -40 percent.
6. Insulation Resistance: 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. Voltage Drop: 0.05 volt, maximum.
8. DC Resistance: 0.01 ohm, maximum.
9. Temperature Rise: +25°C maximum.
10. Dielectric Withstanding Voltage: 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. Equivalent To: MIL-F-28861/15.

MAXWELL PART NUMBER	Circuit	Figure	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)				
					1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
1610-BE7-503S	C	1	50	.05	15	34	42	70	70
1630-BE7-503S	L	2	50	.05	15	34	42	70	70
1610-BE7-273S	C	1	50	.027	8	28	39	64	70
1630-BE7-273S	L	2	50	.027	8	28	39	64	70
1610-DE7-153S	C	1	100	.015	7	25	40	60	60
1630-DE7-153S	L	2	100	.015	7	25	40	60	60
1610-FE7-103S	C	1	200	.01	3	20	35	50	60
1630-FE7-103S	L	2	200	.01	3	20	35	50	60
1610-FE7-502S	C	1	200	.005	--	15	30	50	60
1630-FE7-502S	L	2	200	.005	--	15	30	50	60
1610-FE7-102S	C	1	200	.001	--	4	20	40	55
1630-FE7-102S	L	2	200	.001	--	4	20	40	55

COAXIAL HIGH FREQUENCY EMI FILTERS

C AND L-SECTION SOLDER-IN STYLES

MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

For high frequency solder-in applications where glass seal hermeticity is required on one end only. These filters, with improved reliability, will operate continuously at +150°C and will withstand +300°C installation temperature. Excellent EMI suppression from 500 KHz to 10 GHz.

FIG. 1

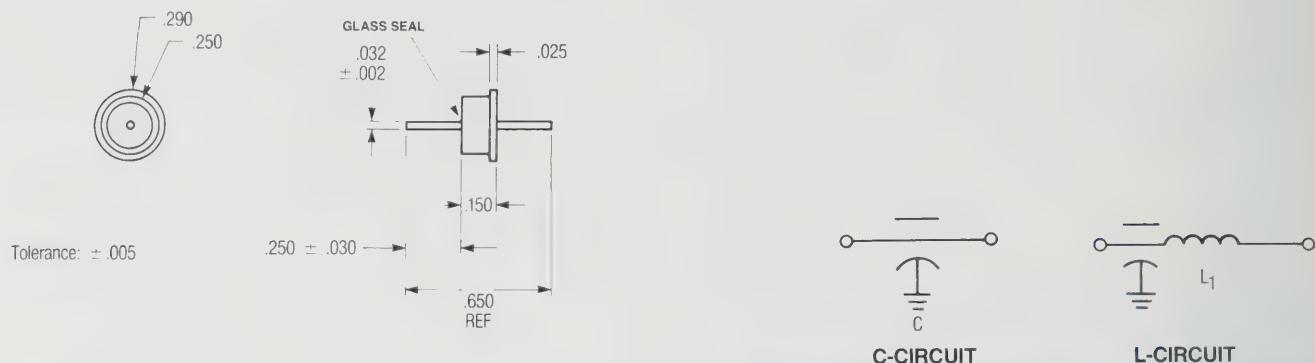
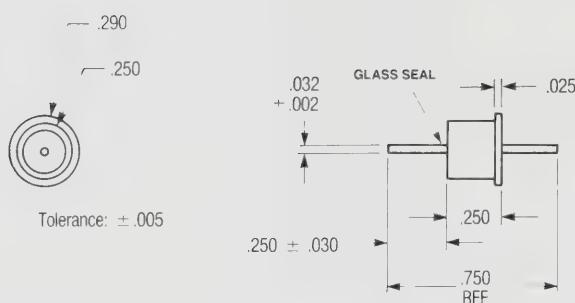


FIG. 2



For glass seal at flange end:

1. Substitute 2512 for 2510 in part number for "C" filters.
2. Substitute 2532 for 2530 in part number for "L" filters.

NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 7 - gold plate per MIL-G-45204, Type III, Class 1.
Silver plate per QQ-W-365, Type III, Grade B also available.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +150°C.
2. **Rated Current:** 10 amperes, maximum.
3. **Capacitance Tolerance:** -0, +100 percent.
4. **Dissipation Factor:** 3.0 percent maximum.
5. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
6. **Insulation Resistance:** 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. **Voltage Drop:** 0.10 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** +35°C maximum.
10. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second. 50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/14.

MAXWELL PART NUMBER	Circuit	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)					
				500 KHz	1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
2510-BE7-254S	C	50	.25	21	31	40	55	70	70
2530-BE7-254S	L	50	.25	21	31	40	55	70	70
2510-BE7-154S	C	50	.15	17	24	38	50	70	70
2530-BE7-154S	L	50	.15	17	24	38	50	70	70
2510-DE7-104S	C	100	.10	14	20	38	48	70	70
2530-DE7-104S	L	100	.10	14	20	38	48	70	70
2510-DE7-503S	C	100	.05	8	15	35	42	70	70
2530-DE7-503S	L	100	.05	8	15	35	42	70	70
2510-FE7-223S	C	200	.022	2	8	26	35	60	70
2530-FE7-223S	L	200	.022	2	8	26	35	60	70
2510-FE7-153S	C	200	.015	--	7	25	34	55	60
2530-FE7-153S	L	200	.015	--	7	25	34	55	60
2510-HE7-103S	C	300	.01	--	3	20	35	50	60
2530-HE7-103S	L	300	.01	--	3	20	35	50	60
2510-HE7-502S	C	300	.005	--	--	15	30	50	60
2530-HE7-502S	L	300	.005	--	--	15	30	50	60

COAXIAL HIGH FREQUENCY EMI FILTERS C AND L-SECTION SOLDER-IN STYLES



APPLICATIONS:

For high frequency solder-in applications where glass seal hermeticity is required on one end only. These filters, with improved reliability, will operate continuously at +150°C and will withstand +300°C installation temperature. Excellent EMI suppression from 500 KHz to 10 GHz.

FIG. 1

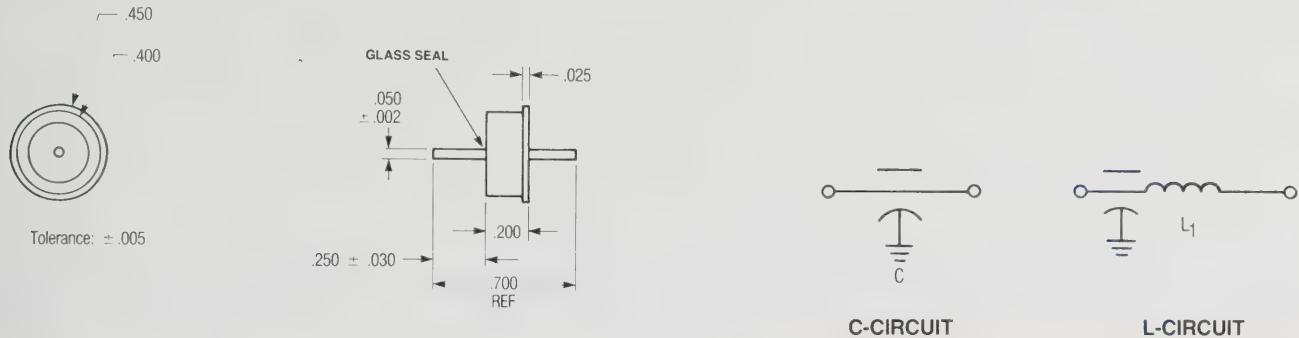
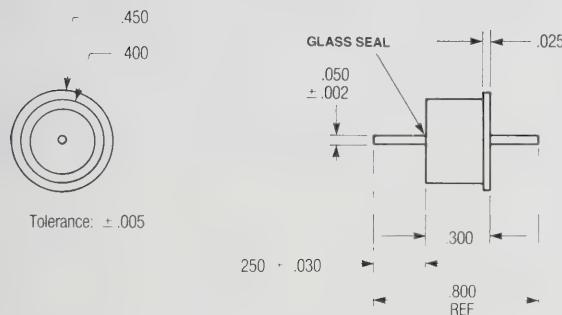


FIG. 2



For glass seal at flange end:

1. Substitute 4012 for 4010 in part number for "C" filters.
2. Substitute 4032 for 4030 in part number for "L" filters.

NOTES: 1. For complete part number designations and codes, see pages 28 & 29.
2. Standard finish is code 7 - gold plate per MIL-G-45204, Type III, Class 1.
Silver plate per QQ-S-365, Type III, Grade B also available.

GENERAL SPECIFICATIONS:

1. **Operating Temperature:** -55°C to +125°C.
2. **Rated Current:** 15 amperes, maximum.
3. **Capacitance Tolerance:** -0, +100 percent.
4. **Dissipation Factor:** 3.0 percent maximum.
5. **Voltage and Temperature Limits of Capacitance:** +15, -40 percent.
6. **Insulation Resistance:** 1000 megohm-microfarad or 100000 megohms minimum, whichever is less, at +25°C. +125°C = 10 percent of +25°C value.
7. **Voltage Drop:** 0.15 volt, maximum.
8. **DC Resistance:** 0.01 ohm, maximum.
9. **Temperature Rise:** +35°C maximum.
10. **Dielectric Withstanding Voltage:** 2.5 x rated dc voltage for 5 seconds ± 1 second.
50 mA maximum charging current.
11. **Equivalent To:** MIL-F-28861/14.

MAXWELL PART NUMBER	Circuit	Figure	Working Voltage (dc)	Min. Cap (μF)	MINIMUM FULL LOAD INSERTION LOSS -55°C TO +125°C PER MIL-STD-220 (dB)					
					500 KHz	1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
4010-BE7-754S	C	1	50	.75	30	38	40	62	70	70
4030-BE7-754S	L	2	50	.75	30	38	40	62	70	70
4010-BE7-125S	C	1	50	1.2	33	38	40	70	70	70
4030-BE7-125S	L	2	50	1.2	33	38	40	70	70	70
4010-DE7-704S	C	1	100	.70	30	36	40	60	70	70
4030-DE7-704S	L	2	100	.70	30	36	40	60	70	70
4010-DE7-504S	C	1	100	.50	26	34	40	58	70	70
4030-DE7-504S	L	2	100	.50	26	34	40	58	70	70
4010-FE7-154S	C	1	200	.15	17	24	38	50	70	70
4030-FE7-154S	L	2	200	.15	17	24	38	50	70	70
4010-FE7-103S	C	1	200	.01	--	--	21	35	50	70
4030-FE7-103S	L	2	200	.01	--	--	21	35	50	70
4010-PE7-503S	C	1	300/115Vac	.05	7	15	34	42	70	70
4030-PE7-503S	L	2	300/115Vac	.05	7	15	34	42	70	70
4010-PE7-103S	C	1	300/115Vac	.01	--	--	21	35	50	70
4030-PE7-103S	L	2	300/115Vac	.01	--	--	21	35	50	70

"S" TEST LEVEL SCREENING

1. **Capacitance and Dissipation Factor:** 100% per MIL-STD-202, Method 305.
2. **Dielectric Withstanding Voltage:** 100% at $2.5 \times$ rated dc voltage for 5 seconds ± 1 second (50 mA maximum charging current).
3. **DC Resistance:** Per MIL-STD-202, Method 303, and MIL-STD-105, 1.0% AQL, Special Inspection Level S-2.
4. **Insulation Resistance:** 100% per MIL-STD-202, Method 302, at rated dc voltage at $+25^\circ\text{C}$.
5. **Visual (10X) and Mechanical:** Per MIL-STD-105, 1.0% AQL, Inspection Level II.

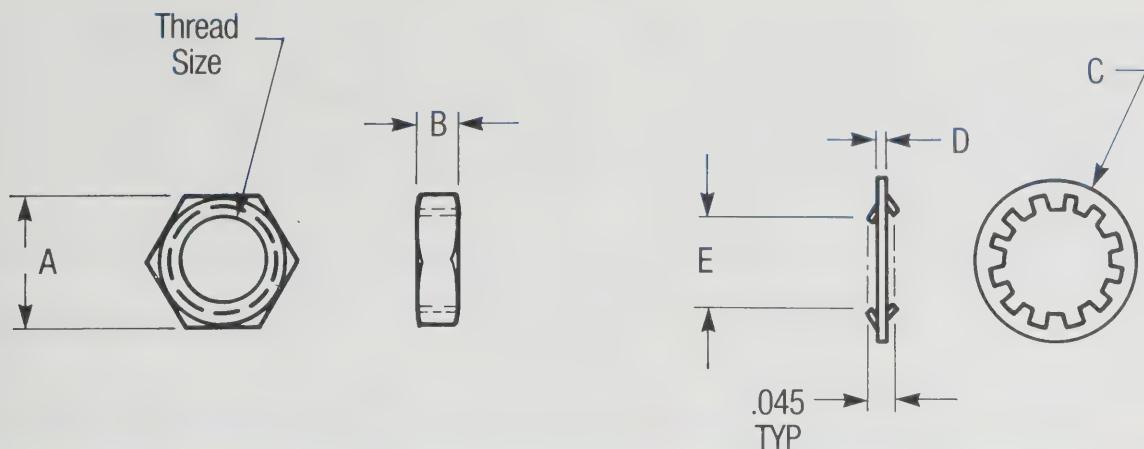
"A" TEST LEVEL SCREENING

1. **Destructive Physical Analysis:** 3 pcs. minimum from each ceramic capacitor lot are microsectioned and examined at 30x for internal defects.
2. **Visual Inspection:** Prior to encapsulation or sealing, 100% inspection for solder joint integrity, cracks or voids in the ceramic capacitors, alignment, unattached solder, solder bridging (ID to OD) and flux or other contamination.
3. **Thermal Shock:** 5 cycles from -55°C to $+125^\circ\text{C}$ per MIL-STD-202, Method 107, Test Condition A.
4. **Voltage Conditioning:** 100 hours at $1.4 \times$ rated dc voltage at $+125^\circ\text{C}$.
5. **Seal Test:** Per MIL-STD-202, Method 112, Test Condition D (except for epoxy sealed filters).
6. **Capacitance and Dissipation Factor:** Per MIL-STD-202, Method 305.
7. **Dielectric Withstanding Voltage:** $2.5 \times$ rated dc voltage for 5 seconds ± 1 second (50 mA maximum charging current).
8. **Insulation Resistance:** Per MIL-STD-202, Method 302, rated dc voltage, at $+25^\circ\text{C}$.
9. **DC Resistance:** Per MIL-STD-202, Method 303.
10. **Insertion Loss:** At full load per MIL-STD-220. Sample per MIL-STD-105, 1.0% AQL, Special Inspection Level S-2.
11. **Visual and Mechanical:** Per MIL-F-15733, Paragraph 4.6.1.

"D" TEST LEVEL = MIL-F-15733 GROUPS A AND B

"E" TEST LEVEL = MIL-F-28861 GROUP A CLASS B

"F" TEST LEVEL = MIL-F-28861 GROUP A CLASS S



Hex Nut and Internal Tooth Lock Washer

Thread Size	Hex Nut		Lock Washer			Suggested Mounting Torque
	A	B	C	D	E	
4-40UNC-2B	.188/.178	.067/.057	.225/.215	.020/.010	.125/.115	36oz-in maximum
8-32UNC-2B	.255/.240	.083/.063	.285/.275	.025/.015	.175/.165	68oz-in maximum
12-32UNEF-2B	.250/.241	.073/.063	.383/.372	.025/.015	.225/.215	68oz-in maximum
1/4-28UNF-2B	.322/.302	.098/.088	.408/.395	.025/.015	.266/.256	68oz-in maximum
5/16-24UNF-2B	.385/.365	.098/.088	.440/.420	.025/.015	.323/.313	68oz-in maximum

1. Hardware supplied with all filters.
2. Material: Hex nut is Brass, QQ-B-626, Alloy 360, half hard.
Lock Washer is Phosphor-Bronze, QQ-B-750, Composition A, hard.
3. Hardware plating matches filter body plating.
4. Bulkhead mounting without hardware (using a threaded hole) necessitates reducing the above listed mounting torques by 50%.

Installation Notes – Filters and Coaxial Capacitors

Considering installation, filters and coaxial capacitors are in the same category as any other sensitive device, such as semiconductors. It is necessary to protect these products from too fast a temperature rise and cool down during the soldering process and excessive mechanical stress.

Filters:

1. Maximum filter performance depends on good grounding during installation to create a ground path for the noise interference.
2. Do not use pliers or any other grasping tool on the filter body as excessive pressure could crack the ceramic capacitor and/or the glass seal. Bending of axial leads should be avoided for the same reasons.
3. Soldering Tips:
 *a. Use a heat sink between soldering point and filter body.
 b. Iron tip temperature should not exceed +240°C (60/40 solder is recommended).
 c. Limit iron contact to 5 to 10 seconds and use an iron rated 18-30 watts.

Coaxial Capacitors:

- *1. Slowly pre-heat the assembly to +200°C. After soldering the assembly, allow it to cool slowly to +90°C.
2. Soldering temperature should not exceed +240°C at the OD and +345°C at the ID. Silver bearing solders are recommended such as Sn62 for the OD and Sn10 for the ID.
3. If soldering to the ID utilizes an iron, use one rated 18-30 watts, Get on and off quickly as extended heat at either termination could result in leaching.

*Too fast a temperature rise and too fast a temperature cool down through the Curie point of the ceramic will cause a large percentage of ceramic cracking. The Curie point can vary from +100°C to +125°C -- depending on the formulation.

PART NUMBERING CODES AND DESIGNATIONS

MAXWELL
SIERRA CAPACITOR/FILTER Division

<u>Broadband Filters</u>	<u>.385</u>	<u>"L"</u>	<u>.410</u>	<u>"L"</u>	<u>.690</u>	<u>"L"</u>
C-SECTION	3710	.230	4110	.410	6910	.700
	3711	.110	—	—	—	—
	3723	.230	—	—	—	—
	3724	.550	—	—	—	—
L-SECTION (BUTTON)	3720	.230	4120	.410	—	—
	3721	.110	—	—	—	—
	—	—	—	—	—	—
	3725	.230	—	—	—	—
L-SECTION	3730	.730	4130	.630	6930	.905
	3731	.730	4131	.630	6931	.905
	—	—	4134	.793	6932	1.060
	—	—	4135	.793	6933	1.060
	—	—	—	—	—	—
	—	—	—	—	—	—
Pi-SECTION	3740	.730	4140	.730	6940	1.180
	—	—	4141	.793	6941	1.205
T-SECTION	—	—	—	—	6950	1.180
	—	—	—	—	6951	1.400

<u>Bolt Style Filters</u>	<u>4-40</u>	<u>8-32</u>	<u>12-32</u>
C-SECTION	5010 Epoxy 5020 Hermetic	5210 Epoxy 5220 Hermetic	5510 Epoxy 5520 Hermetic
L-SECTION	5030 Epoxy 5040 Hermetic	5230 Epoxy 5240 Hermetic	5530 Epoxy 5540 Hermetic
Pi-SECTION	— —	5250 Epoxy 5260 Hermetic	5550 Epoxy 5560 Hermetic

<u>Solder-In Style Filter</u>	<u>.128 OD</u>	<u>.165 OD</u>	<u>.250 OD</u>	<u>.400 OD</u>
C-SECTION Standard	1210	1610	2510	4010
C-SECTION Glass at Flange	1212	1612	2512	4012
L-SECTION Standard	1230	1630	2530	4030
L-SECTION Glass at Flange	1232	1632	2532	4032

<u>Voltage Codes</u>	<u>Current Codes</u>	<u>Terminal/Thread Codes</u>
B = 50vdc	03 = .10 amps	A = Standard — No Option
C = 70vdc	05 = .25	B = Standard Copper
D = 100vdc	06 = .30	E = Alloy 52 (axial)
E = 150vdc	08 = .50	F = .190 thread; .050 X .070 slot
F = 200vdc	09 = 1.0	G = .312 thread; .050 X .070 slot
N = 200vdc/125vac, 0-400 Hz	10 = 2.0	M = .190 thread; axial
P = 300vdc/125vac, 0-400 Hz	11 = 3.0	N = .312 thread; axial
R = 400vdc/230vac, 0-400 Hz	12 = 4.0	R = .312 thread; .062 X .125 slot
S = Special	13 = 5.0	
	15 = 10.0	
	16 = 15.0	

Finish Codes

- 2 = Electro-tin per MIL-T-10727, Type 1.
- 3 = Tin-lead per MIL-P-81728.
- 4 = Silver per QQ-S-365, Type III, Grade B.
- 5 = Gold per MIL-G-45204, Type I, Class 1.
- 6 = Gold per MIL-G-45204, Type II, Class 1.
- 7 = Gold per MIL-G-45204, Type III, Class 1.

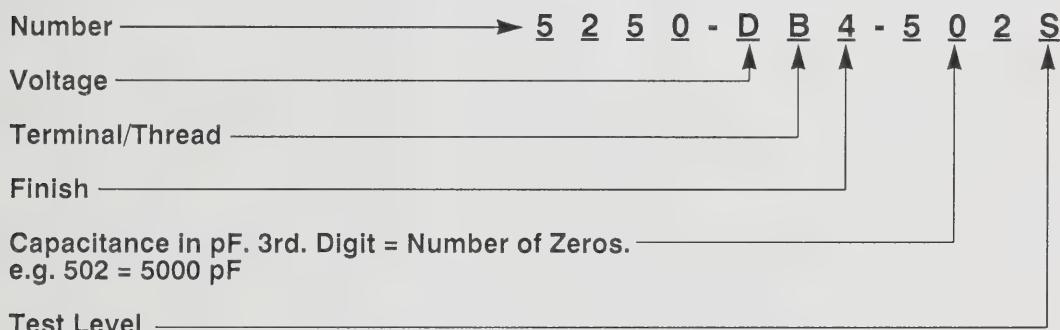
Test Level Codes

- A = Maxwell 100% Screening.
- D = Per MIL-F-15733, Groups A and B.
- E = Per MIL-F-28861, Group A (Class B)
- F = Per MIL-F-28861, Group A (Class S)
- S = Standard Maxwell Product Screening

Using the codes and designations on pages 28 and 29; here is an example of how to construct a Pi Filter part number:

PART NUMBERING SYSTEM

Pi-SECTION



CROSS REFERENCE

MIL-F-28861 and MIL-F-15733 QPL



MILITARY PART NUMBER	MAXWELL PART NUMBER	MILITARY PART NUMBER	MAXWELL PART NUMBER
M28861/12-001GB	1231-BE7-153EP	M28861/01-003TB	4120-CF2-704EP
M28861/12-002GB	1211-BE7-153EP	M28861/01-004TB	4110-CF2-704EP
M28861/12-003GB	1231-DE7-272EP	M28861/01-009TB	4120-NF2-154EP
M28861/12-004GB	1211-DE7-272EP	M28861/01-010TB	4110-NF2-154EP
M28861/12-005GB	1231-DE7-502EP	M28861/01-013TB	4120-CG2-704EP
M28861/12-006GB	1211-DE7-502EP	M28861/01-014TB	4110-CG2-704EP
M28861/12-007GB	1231-FE7-100EP	M28861/01-019TB	4120-NG2-154EP
M28861/12-008GB	1211-FE7-100EP	M28861/01-020TB	4110-NG2-154EP
M28861/12-009GB	1231-FE7-250EP		
M28861/12-010GB	1211-FE7-250EP	M28861/06-004SB	5011-FB4-102EP
M28861/12-011GB	1231-FE7-101EP	M28861/06-005SB	5011-FB4-502EP
M28861/12-012GB	1211-FE7-101EP	M28861/06-006SB	5011-FB4-103EP
M28861/12-013GB	1231-FE7-501EP	M28861/06-007SB	5031-FB4-103EP
M28861/12-014GB	1211-FE7-501EP		
M28861/12-015GB	1231-FE7-102EP	M15733/26-0001	4133-SF2-09DP
M28861/12-016GB	1211-FE7-102EP	M15733/26-0002	4141-SF2-09DP
M28861/12-017GB	1233-BE7-153EP	M15733/26-0003	4132-SF2-09DP
M28861/12-018GB	1213-BE7-153EP	M15733/26-0004	4133-SF2-11DP
M28861/12-019GB	1233-DE7-272EP	M15733/26-0005	4141-SF2-11DP
M28861/12-020GB	1213-DE7-272EP	M15733/26-0006	4132-SF2-11DP
M28861/12-021GB	1233-DE7-502EP	M15733/26-0007	4133-SF2-13DP
M28861/12-022GB	1213-DE7-502EP	M15733/26-0009	4141-SF2-13DP
M28861/12-023GB	1233-FE7-100EP	M15733/26-0010	4132-SF2-13DP
M28861/12-024GB	1213-FE7-100EP	M15733/26-0011	4141-SF2-05DP
M28861/12-025GB	1233-FE7-250EP	M15733/26-0013	4133-SG2-09DP
M28861/12-026GB	1213-FE7-250EP	M15733/26-0014	4141-SG2-09DP
M28861/12-027GB	1233-FE7-101EP	M15733/26-0015	4132-SG2-09DP
M28861/12-028GB	1213-FE7-101EP	M15733/26-0016	4133-SG2-11DP
M28861/12-029GB	1233-FE7-501EP	M15733/26-0017	4141-SG2-11DP
M28861/12-030GB	1213-FE7-501EP	M15733/26-0018	4132-SG2-11DP
M28861/12-031GB	1233-FE7-102EP	M15733/26-0019	4133-SG2-13DP
M28861/12-032GB	1213-FE7-102EP	M15733/26-0021	4141-SG2-13DP
M28861/12-033GB	1231-BE7-103EP	M15733/26-0022	4132-SG2-13DP
M28861/12-034GB	1211-BE7-103EP	M15733/26-0023	4141-SG2-05DP
M28861/12-035GB	1233-BE7-103EP		
M28861/12-036GB	1213-BE7-103EP		
M28861/05-001TB	4135-NF2-05EP		
M28861/05-002TB	4134-NF2-05EP		
M28861/05-003TB	4141-NF2-05EP		
M28861/05-004TB	4135-NF2-09EP		
M28861/05-005TB	4134-NF2-09EP		
M28861/05-006TB	4141-NF2-09EP		
M28861/05-007TB	4135-NF2-11EP		
M28861/05-008TB	4134-NF2-11EP		
M28861/05-009TB	4141-NF2-11EP		
M28861/05-010TB	4135-NF2-13EP		
M28861/05-011TB	4134-NF2-13EP		
M28861/05-012TB	4141-NF2-13EP		
M28861/05-013TB	4135-NG2-05EP		
M28861/05-014TB	4134-NG2-05EP		
M28861/05-015TB	4141-NG2-05EP		
M28861/05-016TB	4135-NG2-09EP		
M28861/05-017TB	4134-NG2-09EP		
M28861/05-018TB	4141-NG2-09EP		
M28861/05-019TB	4135-NG2-11EP		
M28861/05-020TB	4134-NG2-11EP		
M28861/05-021TB	4141-NG2-11EP		
M28861/05-022TB	4135-NG2-13EP		
M28861/05-023TB	4134-NG2-13EP		
M28861/05-024TB	4141-NG2-13EP		

FILTER SPECIFICATION SHEET



name _____ dept _____
company _____
address _____
city _____ state _____ zip _____
telephone _____ fax _____
SIMILAR TO: _____

CIRCUIT RATINGS

MAXIMUM VOLTAGE DROP

FILTER _____	AMPS _____	VDC _____	VAC _____	VAC _____	Hz _____	At Maximum Frequency
FILTER _____	AMPS _____	VDC _____	VAC _____	VAC _____	Hz _____	_____

RELIABILITY LEVEL

Commercial _____ Flight _____ Space _____ Other _____ Program Name _____

INSERTION LOSS REQUIREMENTS, per MIL-STD-220

CIRCUIT CONFIGURATION REQUIRED (if known)

Frequency	Insertion Loss	Comments	
_____	_____	_____	C
_____	_____	_____	L
_____	_____	_____	T
_____	_____	_____	Pi
_____	_____	_____	Other

ENVIRONMENTAL REQUIREMENTS

Temperature Range _____ MIL-F-15733 _____ MIL-F-28861 _____

MECHANICAL CONFIGURATION

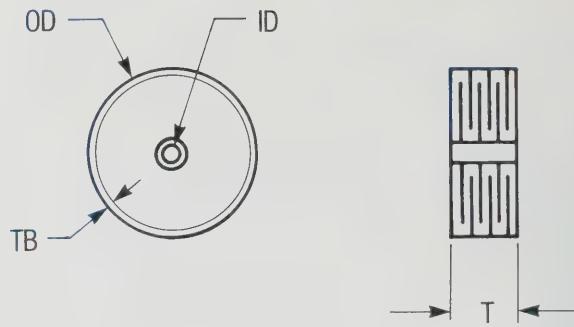
Sketch should indicate overall dimensions (if critical), type and arrangement of mounting, type and arrangement of terminal or input Connectors.
(If additional space is required, please use reverse side.)

SPECIAL REQUIREMENTS _____

COAXIAL FEED-THRU CAPACITORS

EIA CHARACTERISTICS: COG, X7R

 **MAXWELL**
SIERRA CAPACITOR/FILTER Division



A-A VIEW

APPLICATIONS:

Coaxial feed-thru capacitors of multilayer construction exhibit very low impedance to ground resulting in optimum EMI suppression. The alternate layered construction (see figure 1) provides very low series resistance and series inductance which allows for the low impedance at high frequencies. Chassis or bulkhead mounted, either individually or in a cylindrical can (C, L, Pi or T filters), provides very good isolation of the input signal from the output of the capacitor or filter.

TB = Termination Bands -.005 TYP
 OD = Outside Diameter
 ID = Inside Diameter
 T = Thickness

PART NUMBER AND ORDERING INFORMATION

Style, OD _____ ID _____ Voltage _____ TC _____ Capacitance in pF. 3rd. Digit = Number of Zeros. e.g. 501 = 500 pF Tolerance _____ Termination _____ Test Level _____	C F 1 0 - D D R - 5 0 1 - M P S
---	--

Note: For Styles, OD, ID, thickness, minimum-maximum capacitance values and voltages, see tables.

ID Codes

B = .020 ± .003
 C = .025 ± .003
 D = .032 ± .003
 H = .036 ± .003
 J = .040 ± .003
 K = .045 ± .005
 M = .056 ± .005
 R = .065 ± .005
 S = .070 ± .005

Voltage Codes
 B = 50vdc
 C = 70vdc
 D = 100vdc
 E = 150vdc
 N = 200vdc/125vac
 0-400 Hz
 P = 300vdc/125vac
 0-400 Hz
 R = 400vdc/230vac
 0-400 Hz

Temperature Coefficients
 C = COG (NPO/BP)
 R = X7R

Terminations
 P = Palladium silver
 S = Silver

Test Levels
 S = Standard product screening
 A = Maxwell100% screening
 X = Special to customer specification

Capacitance Tolerances
 J = ± 5% (NPO only)
 K = ± 10%
 M = ± 20%
 P = -0% + 100%
 Z = -20% + 80%

Example: CF10 = .100 OD; D = .032 ID; D = 100vdc; R = X7R; 501 = 500 pF; M = ± 20%; P = palladium silver; S = test level.

1. Test level S: items 1, 2, 4, and 5 are performed. Dissipation Factor: 2.5% maximum for X7R and .15% maximum for NPO.
2. Test level A: items 1, 3, 4, 6, 7, 8 and 11 are performed. Dissipation Factor: 2.5% maximum for X7R and .15% maximum for NPO.

COAXIAL FEED-THRU CAPACITORS

EIA CHARACTERISTICS: NPO, X7R

 MAXWELL
SIERRA CAPACITOR/FILTER Division

SIZE AND CAPACITANCE RANGES -- COG (NPO)

Maxwell Style	CF04	CF10	CF13	CF19	CF26	CF34	CF37	CF64
OD ± .005	.080	.100	.130	.190	.265	.345	.370	.645
ID's Available	B,C	D,J	D,J,M	K,S	S	J,K,R	J,K,R	R
Maximum Thickness	.040	.045	.060	.065	.070	.080	.080	.150
50vdc	Min. Cap. Max. Cap.	10pF 300pf	14pF 1000pF	27pF 3000pF	56pF 9600pF	100pF .017μF	330pF .06μF	380pF .066μF
70vdc	Min. Cap. Max. Cap.	10pF 200pF	14pF 900pF	27pF 2600pF	56pF 7600pF	100pF .015μF	330pF .055μF	380pF .06μf
100vdc	Min. Cap. Max. Cap.	10pF 130pF	14pF 800pF	27pF 2200pF	56pF 7000pF	100pF .013μF	330pF .04μF	380pF .044μF
150vdc	Min. Cap. Max. Cap.	-- --	14pF 160pF	27pF 700pF	56pF 2400pF	100pF 4400pF	330pF .022μf	380pF .024μF
200vdc/ 125vac	Min. Cap.	--	--	--	56pF	100pF	330pF	380pF
0-400 Hz	Max. Cap.	--	--	--	1000pF	2500pF	.012μF	.013μF
300vdc/ 125vac	Min. Cap.	--	--	--	--	100pF	330pF	380pF
0-400 Hz	Max. Cap.	--	--	--	--	1500pF	5400pF	5900pF
400vdc/ 230vac	Min. Cap.	--	--	--	--	--	330pF	380pF
0-400 Hz	Max. Cap.	--	--	--	--	--	2700pF	2900pF
								7600pF

SIZE AND CAPACITANCE RANGES -- X7R

Maxwell Style	CF04	CF10	CF13	CF19	CF26	CF34	CF37	CF64
OD ± .005	.080	.100	.130	.190	.265	.345	.370	.645
ID's Available	B,C	D,J	D,J,M	K,S	S	J,K,R	J,K,R	R
Maximum Thickness	.040	.045	.060	.065	.070	.080	.080	.150
50vdc	Min. Cap. Max. Cap.	390pF .017μF	560pF .034μF	100pF .12μF	2200pF .39μF	3900pF .66μF	3300pF 1.8μF	4700pF 1.98μF
70vdc	Min. Cap. Max. Cap.	390pF .012μF	560pF .022μF	100pF .10μF	2200pF .32μF	3900pF .52μF	3300pF 1.8μF	4700pF 1.98μF
100vdc	Min. Cap. Max. Cap.	390pF .012μF	560pF .022μF	100pF .10μF	2200pF .32μF	3900pF .52μF	3300pF 1.5μF	4700pF 1.65μF
150vdc	Min. Cap. Max. Cap.	-- --	560pF .0075μF	100pF .025μF	2200pF .12μF	3900pF .14μF	3300pF .70μF	4700pF .77μF
200vdc/ 125vac	Min. Cap.	--	--	--	2200pF	3900pF	3300pF	4700pF
0-400 Hz	Max. Cap.	--	--	--	.033μF	.06μF	.30μF	.30μF
300vdc/ 125vac	Min. Cap.	--	--	--	--	3900pF	3300pF	4700pF
0-400 Hz	Max. Cap.	--	--	--	--	.03μF	.30μF	.30μF
400vdc/ 230vac	Min. Cap.	--	--	--	--	--	3300pF	4700pF
0-400 Hz	Max. Cap.	--	--	--	--	--	.10μF	.12μF
								.50μF *

*125vac, 0-400Hz application max. cap. is .30μF and for 230vac, 0-400Hz applications max. cap. is .15μF.
Cap. values above these result in reactive currents greater than 100mA causing excessive heating.

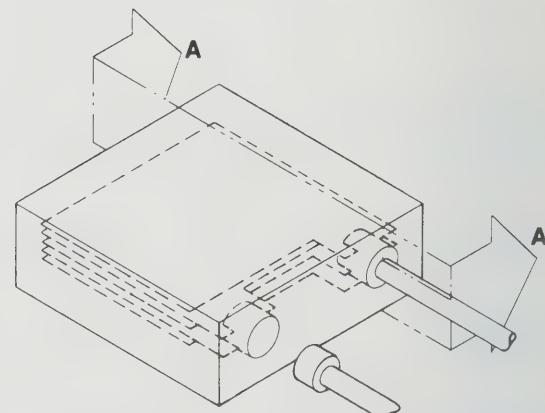
GENERAL INFORMATION

MONOLITHIC CERAMIC CAPACITORS ARE CAPABLE OF WITHSTANDING AND OPERATING AT TEMPERATURES UP TO 260°C WHEN PROPERLY DESIGNED AND MANUFACTURED FOR THIS APPLICATION. MAXWELL HAS DEVELOPED A DESIGN WHICH IS IDEAL FOR OPERATION AT THESE HIGH TEMPERATURES. THIS DESIGN IS A CERAMIC CASED CAPACITOR (C³). SEE FIGURE 1. PROBLEMS ASSOCIATED WITH EPOXY CASED-EPOXY POTTED CAPACITORS ARE NON-EXISTENT, EVEN AT 260°C. THE ADVANTAGES OF THE C³ CONSTRUCTION ARE:

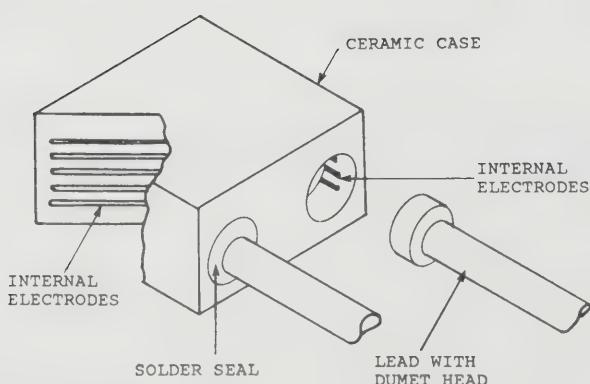
- UNIFORM COEFFICIENT OF LINEAR EXPANSION ELIMINATES CHIP CRACKING DURING THERMAL SHOCK.
- NO "PULL AWAY" OR CRACKING OF EPOXY POTTING OR EPOXY CASE AT ELEVATED TEMPERATURES.
- IMPERVIOUS TO MOISTURE PENETRATION.
- ELIMINATION OF THE EPOXY CASE ALLOWS FOR MORE CAPACITANCE IN THE SAME PACKAGE SIZE.
- IMPROVED TERMINAL PULL STRENGTH AT 260°C.

APPLICATIONS AND INSTALLATION

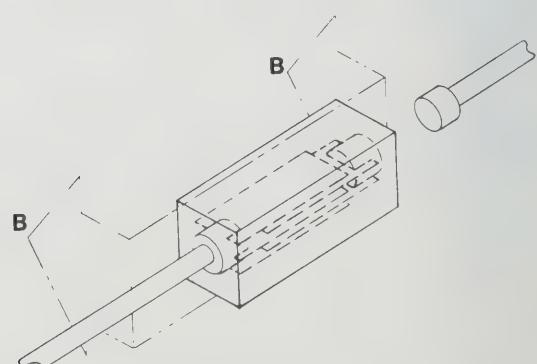
WHEN USING CERAMIC CAPACITORS FOR HIGH TEMPERATURE APPLICATIONS SUCH AS OIL WELL LOGGING (DOWN HOLE), JET ENGINE CONTROLS, OR GEOPHYSICAL PROBES, CERTAIN CHARACTERISTICS MUST BE TAKEN INTO CONSIDERATION. SOME OF THESE INCLUDE CAPACITANCE CHANGE, INSULATION RESISTANCE, AND DISSIPATION FACTOR. THE TYPICAL CHARACTERISTICS FOR MAXWELL'S CERAMICS ARE SHOWN IN THE FOLLOWING GRAPHS. ALSO INCLUDED ARE TABLES SHOWING THE CAPACITANCE RANGE FOR BOTH DIELECTRIC MATERIALS FOR AVAILABLE VOLTAGE RATINGS AND SIZE.



Radial C³ Capacitor Internal Construction

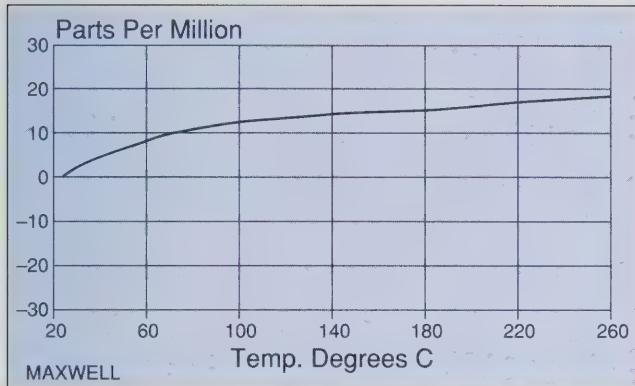


Radial C³ - One Lead Removed

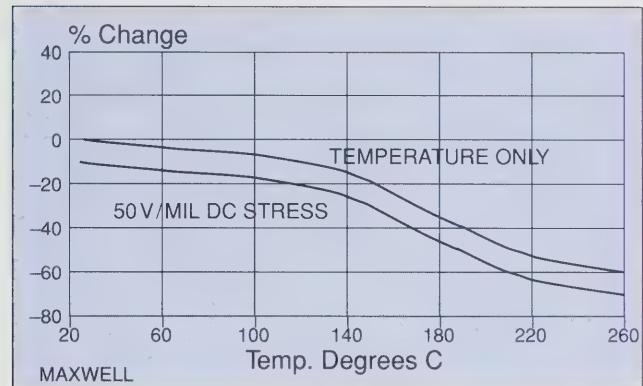


Axial C³ Internal Construction

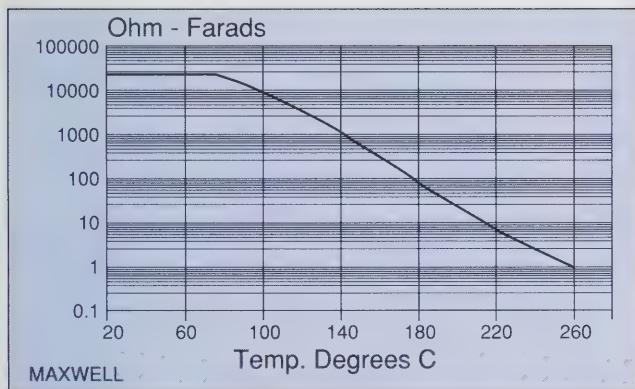
Capacitance vs. Temp. COG DIELECTRIC



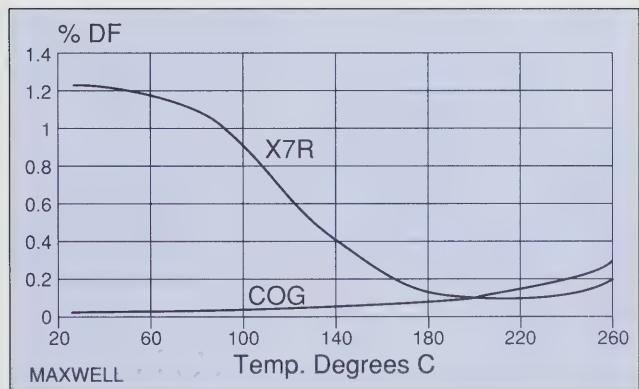
Capacitance vs. Temperature X7R DIELECTRIC



Insulation Resistance vs. Temp COG & X7R DIELECTRIC



Dissipation Factor COG & X7R DIELECTRIC



*C³ STANDARD AXIAL AND RADIAL CERAMIC CAPACITORS

APPLICATIONS:

C³ ceramic cased capacitors are a new, unique design concept which eliminates potential problems associated with conventional epoxy cased/epoxy potted capacitors.

- Uniform coefficient of linear expansion eliminates chip cracking during thermal shock.
- No cracking of case or potting at elevated temperatures.
- Impervious to moisture penetration.
- Superior volumetric efficiency.

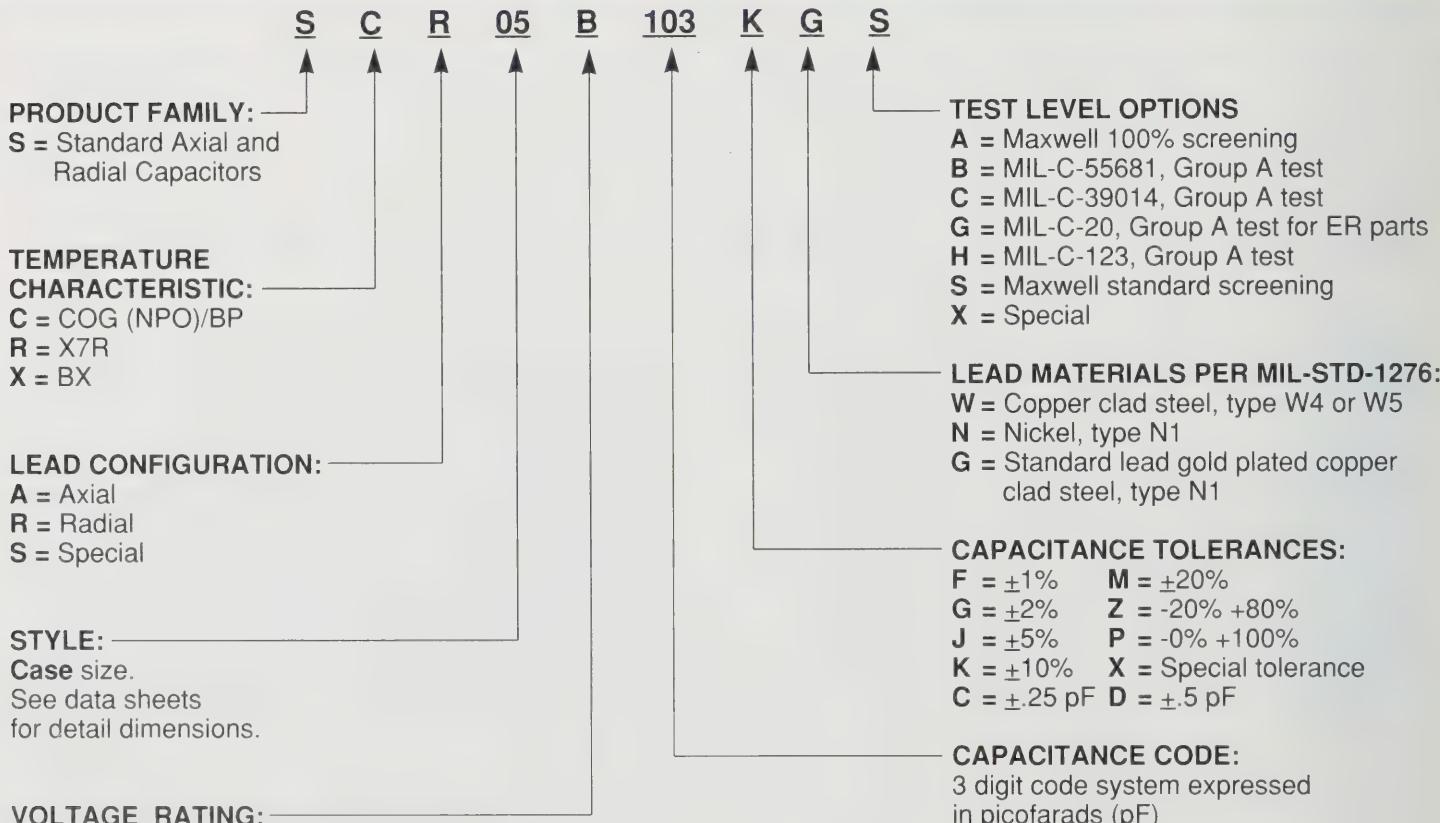


NPO capacitors, which exhibit little change in capacitance with variations in temperature, are used in RF oscillators, precision timing circuits, wave filters and other circuits requiring a predictable linear temperature coefficient.

Installation: Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Soldering temperature should not exceed +240°C.

For wave soldering, the parts should be slowly heated to +150°C and, after soldering, be allowed to slowly cool down to +90°C to preclude thermal shocking the parts.

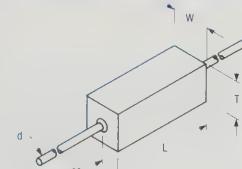
PART NUMBER AND ORDERING INFORMATION



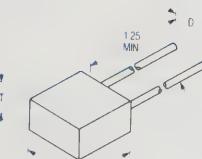
*C³ = Ceramic Cased Capacitors, Patent # 4,931,899.

*C STANDARD AXIAL AND RADIAL CERAMIC CAPACITORS - COG (NPO)/BP DIELECTRIC

MAXWELL
SIERRA CAPACITOR/FILTER Division



AXIAL



RADIAL

Dimensions	STYLE	16	25	39	50	69	05	06	07	08	09
	WVDC	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200
1.0 (pF)											
1.2											
1.5											
1.8											
2.2											
2.9											
3.3											
3.9											
4.7											
5.6											
6.8											
8.2											
10											
12											
15											
18											
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27											
33											
39											
47											
56											
68											
82											
100											
120											
150											
180											
220											
270											
330											
390											
470											
560											
680											
820											
1000											
1200											
1500											
1800											
2200											
2700											
3300											
3900											
4700											
5600											
6800											
8200											
.01(Mfd)											
.012											
.015											
.018											
.022											
.027											
.033											
.039											
.047											
.056											
.068											
.082											
.1											
.12											
.15											
.18											

NOTES:

1. COG (NPO) BP Dielectric
2. Indicates the sizes and capacitance ranges specified in MIL-C-20, CC/CCR75, 76, 77, 78 and 79 for axials and CC/CCR05, 06 and 07 (MAXWELL 09) for radials.
3. Capacitor sizes and capacitance values shown above are standard. Other sizes and capacitance values are available upon request.
4. **Capacitance Tolerances:** $\pm 1\%$, $\pm 2\%$, $\pm 5\%$, $\pm 10\%$ ($\pm .25\text{pF}$, $\pm .5\text{pF}$ available for 1.0pF to 10pF only)
5. **Marking:**
Capacitance (3 digit code)
Manufacturer's I.D., Tolerance, Voltage, Lot/Date Code

GENERAL SPECIFICATIONS:

Temperature Coefficient: $\Delta C = 0 \pm 30\text{ppm}/^\circ\text{C}$ from -55°C to $+125^\circ\text{C}$.

Capacitance Tested at:

1MHz, 1.0Vrms for $C \leq 100\text{pF}$
1KHz, 1.0Vrms for $C \geq 100\text{pF}$

Dissipation Factor ($\tan \delta$):

$\leq .15\%$ at same test condition as capacitance measurement.

Insulation Resistance:

$\geq 100,000\text{ M}\Omega$ or $1,000\text{ M}\Omega \cdot \mu\text{F}$ minimum, whichever is less, @ $+25^\circ\text{C}$.
 $\geq 10,000\text{ M}\Omega$ or $100\text{ M}\Omega \cdot \mu\text{F}$ minimum, whichever is less, @ $+125^\circ\text{C}$.

Dielectric Withstanding Voltage: 250% of rated dc voltage.

Environmental and Mechanical Tests:

Capable of meeting MIL-C-39014 requirements.

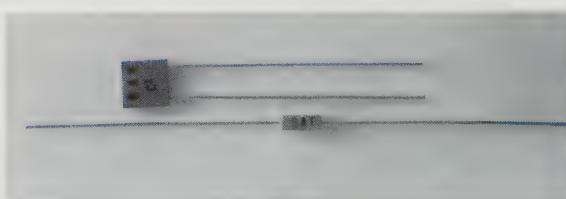
"C³ STANDARD AXIAL AND RADIAL CERAMIC CAPACITORS

MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

C³ ceramic cased capacitors are a new, unique design concept which eliminates potential problems associated with conventional epoxy cased/epoxy potted capacitors.

- Uniform coefficient of linear expansion eliminates chip cracking during thermal shock.
- No cracking of case or potting at elevated temperatures.
- Impervious to moisture penetration.
- Superior volumetric efficiency.



BX and X7R capacitors are used in coupling circuits (IF and RF); for bypassing and decoupling in computers and servo systems; power supply line filtering and frequency discrimination.

Installation: Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Soldering temperature should not exceed +240°C. For wave soldering, the parts should be slowly heated to +150°C and, after soldering, be allowed to slowly cool down to +90°C to preclude thermal shocking the parts.

PART NUMBER AND ORDERING INFORMATION

S R R 05 B 103 K G S

PRODUCT FAMILY:

S = Standard Axial and Radial Capacitors

TEMPERATURE

CHARACTERISTIC:

C = COG (NPO)/BP

R = X7R

X = BX

LEAD

CONFIGURATION:

A = Axial

R = Radial

S = Special

STYLE:

Chip size.

See data sheets
for detail dimensions.

VOLTAGE RATING:

B = 50vdc

D = 100vdc

F = 200vdc

S = Special

TEST LEVEL OPTIONS

A = Maxwell 100% screening

B = MIL-C-55681, Group A test

C = MIL-C-39014, Group A test

G = MIL-C-20, Group A test for ER parts

H = MIL-C-123, Group A test

S = Maxwell standard screening

X = Special

LEAD MATERIALS

PER MIL-STD-1276:

G = Standard lead gold plated copper clad steel, type W2

N = Nickel, type N1

W = Copper clad steel, type W4 or W5

CAPACITANCE TOLERANCES:

J = $\pm 5\%$ M = $\pm 20\%$

K = $\pm 10\%$ X = Special tolerance

CAPACITANCE CODE:

3 digit code system expressed

in picofarads (pF)

103 = 10,000 pF

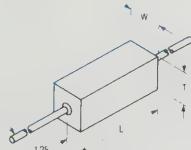
151 = 150 pF

6R8 = 6.8 pF

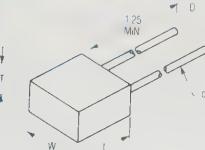
*C³ = Ceramic Cased Capacitors, Patent # 4,931,899.

*C³ STANDARD AXIAL AND RADIAL CERAMIC CAPACITORS

MAXWELL
SIERRA CAPACITOR/FILTER Division



AXIAL



RADIAL

Dimensions	STYLE	16	25	39	50	69	05	06	07	08	09
L	.170 max.	.270 max.	.400 max.	.520 max.	.720 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.	
W	.080 max.	.100 max.	.150 max.	.265 max.	.370 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.	
T	.080 max.	.100 max.	.150 max.	.160 max.	.160 max.	.100 max.	.100 max.	.150 max.	.100 max.	.150 max.	
D						.200 ± .030	.200 ± .030	.200 ± .030	.400 ± .030	.400 ± .030	
d	.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002	.025 ± .002	.020 ± .002	.020 ± .002	.020 ± .020	.025 ± .002	.025 ± .002	
WVDC	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	50 100 200	
Capacitance Range	100 (pF)										
	120										
	150										
	180										
	220										
	270										
	330										
	390										
	470										
	560										
	680										
	820										
	1000										
	1200										
	1500										
	1800										
	2200										
	2700										
	3300										
	3900										
	4700										
	5600										
	6800										
	8200										
	.01 (Mfd)										
	.012										
	.015										
	.018										
	.022										
	.027										
	.033										
	.039										
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	.056										
	.068										
	.082										
	.1										
	.12										
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	.18										
	.22										
	.27										
	.33										
	.39										
	.47										
	.56										
	.68										
	.82										
	1.0										
	1.2										
	1.5										
	1.8										
	2.2										
	2.7										
	3.3										
	3.9										
	4.7										
	5.6										
	6.8										
	8.2										

NOTES:

- Indicates BX and X7R characteristics.
- Indicates X7R characteristic only.
- Indicates the sizes and capacitance range specified in MIL-C-39014, CKR 11, 12, 14, 15 and 16 for axials and CKR 05 and 06 for radials.
- Capacitor sizes and capacitance values shown above are standard. Other sizes and capacitance values are available upon request.
- Capacitance Tolerances:** ±5%, ±10%, ±20%.
- Marking:** Capacitance, Manufacturer's I.D., Tolerance, Voltage, Lot/Date Code

GENERAL SPECIFICATIONS:

Voltage-Temperature Limits: from -55°C to +125°C

Without dc Bias $\Delta C = \pm 15\%$ (X7R & BX).

With rated dc Voltage: $\Delta C = +15\% - 25\%$ (BX only).

Capacitance: Tested at 1KHz, 1.0Vrms

Dissipation Factor ($\tan \delta$): ≤ 2.5% at 1KHz, 1.0Vrms

Insulation Resistance: ≥ 100,000 MΩ or 1,000 MΩ • μF minimum, whichever is less, @ +25°C.

≥ 10,000 MΩ or 100 MΩ • μF minimum, whichever is less, @ +125°C.

Dielectric Withstanding Voltage: 250% of rated dc voltage.

Environmental and Mechanical Tests: Capable of meeting MIL-C-39014 requirements.

*C³ HIGH TEMPERATURE (+200°C) AXIAL AND RADIAL CERAMIC CAPACITORS



APPLICATIONS:

C³ ceramic cased capacitors, with a new, unique design concept, are ideally suited for continuous operation up to +200°C. Problems associated with epoxy cased-epoxy potted capacitors, such as material deterioration, cracks in cases and potted areas, are nonexistent, even at +200°C.

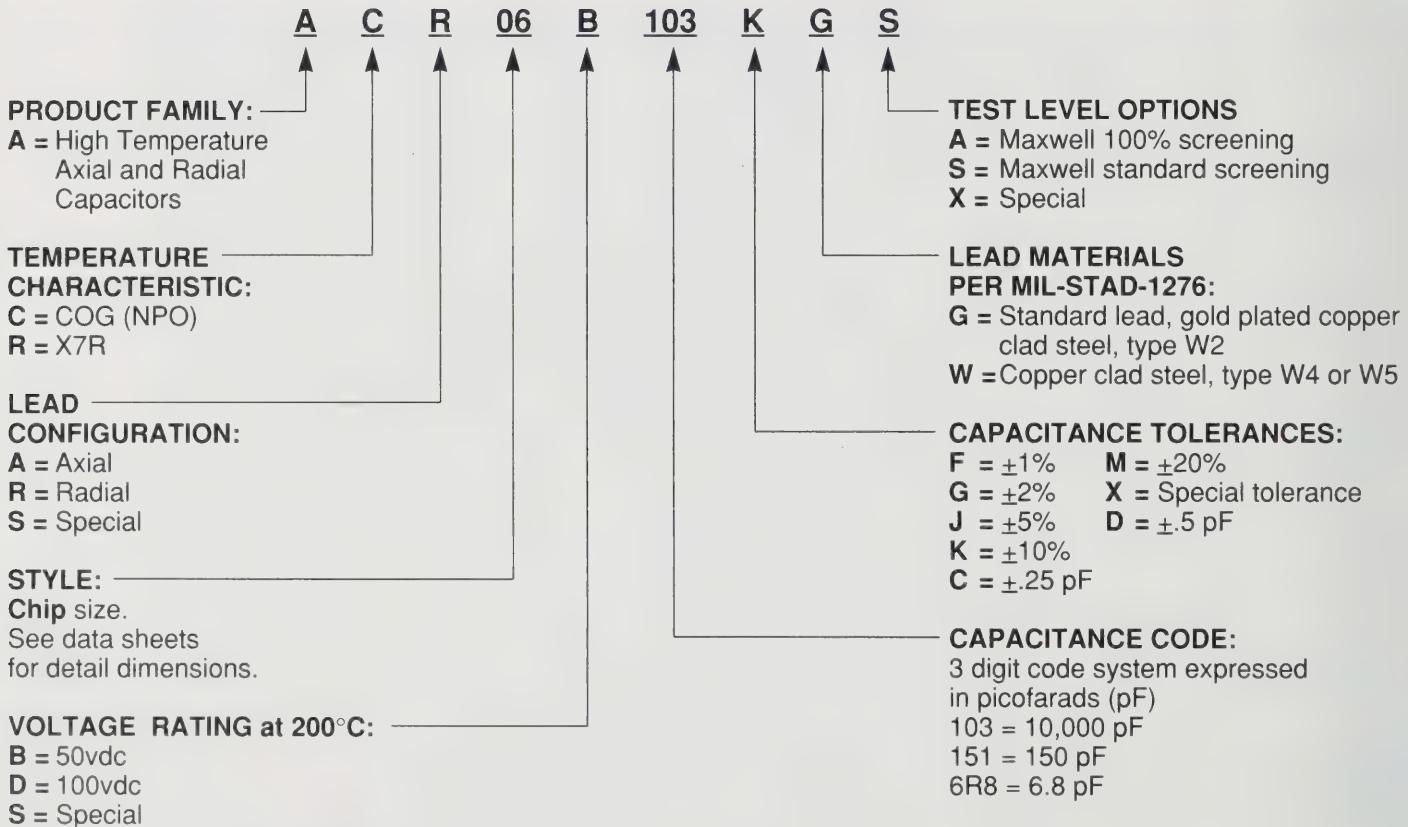
- Uniform coefficient of linear expansion eliminates chip cracking during thermal shock.
- No "pull-away" of epoxy potting from epoxy case at elevated temperatures.
- Impervious to moisture penetration.
- Superior volumetric efficiency.



NPO capacitors, which exhibit little change in capacitance with variations in temperature, are used in RF oscillators, precision timing circuits, wave filters and other circuits requiring a predictable linear temperature coefficient.

Installation: Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Soldering temperature should not exceed +300°C.

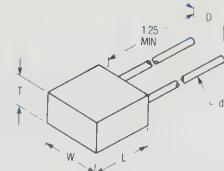
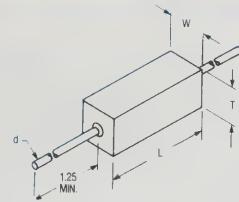
PART NUMBER AND ORDERING INFORMATION



*C³ = Ceramic Cased Capacitors, Patent # 4,931,899.

***C³ HIGH TEMPERATURE (+200°C)
AXIAL AND RADIAL CERAMIC CAPACITORS
COG (NPO) DIELECTRIC**

MAXWELL
SIERRA CAPACITOR/FILTER Division



AXIAL

RADIAL

Dimensions	STYLE	16	25	39	50	69	05	06	07	08	09
	L	.170 max.	.270 max.	.400 max.	.520 max.	.720 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.
	W	.080 max.	.100 max.	.150 max.	.265 max.	.370 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.
	T	.080 max.	.100 max.	.150 max.	.160 max.	.160 max.	.100 max.	.100 max.	.150 max.	.100 max.	.150 max.
	D						.200 ± .030	.200 ± .030	.200 ± .030	.400 ± .030	.400 ± .030
	d	.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002	.025 ± .002	.020 ± .002	.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002
	WVDC	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100
Capacitance Range	1.0 (pF)	1.2									
	1.5	1.8									
	2.2	2.9									
	3.3	3.9									
	4.7	5.6									
	6.8	8.2									
	10	12									
	15	18									
	22	27									
	33	39									
	47	56									
	68	82									
	100	120									
	150	180									
	220	270									
	330	390									
	470	560									
	680	820									
	1000	1200									
	1500	1800									
	2200	2700									
	3300	3900									
	4700	5600									
	6800	8200									
	.01 (Mfd)	.012									
	.015	.018									
	.022	.027									
	.033	.039									
	.047	.056									
	.068	.082									
	.1	.12									
	.15	.18									
	.22	.27									
	.33	.39									
	.47	.56									
	.68	.82									

NOTES:

1. COG (NPO) Dielectric

2. Capacitor sizes and capacitance values shown above are standard. Other sizes and capacitance values are available upon request.

3. Capacitance Tolerances:

±1%, ±2%, ±5%, ±10%, ±20%

(±25pF and ±5 pF available for 1.0 pF only)

Capacitance (3 digit code), Manufacturer's I.D.,
Tolerance, Voltage, Lot/Date Code

GENERAL SPECIFICATIONS:

Voltage Rating: 50/100vdc at +200°C

Temperature Coefficient: $\Delta C = 0 \pm 30\text{ppm}/^\circ\text{C}$ from -55°C to +125°C

Capacitance: Tested at 1MHz, 1.0vrms for $\leq 100\text{pF}$

1KHz, 1.0vrms for $\leq 100\text{pF}$

Dissipation Factor ($\tan \delta$): $\leq .15\%$ at same test conditions as capacitance measurements.

Insulation Resistance: $\geq 100,000\text{ M}\Omega$ or $1,000\text{ M}\Omega \cdot \mu\text{F}$ minimum, whichever is less, @ +25°C.

$\geq 10,000\text{ M}\Omega$ or $100\text{ M}\Omega \cdot \mu\text{F}$ minimum, whichever is less, @ +125°C.

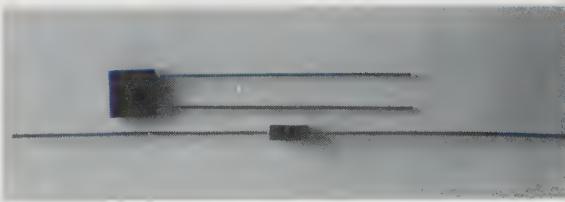
Dielectric Withstanding Voltage: 250% of rated dc voltage.

[®]C³ HIGH TEMPERATURE (+200°C) AXIAL AND RADIAL CERAMIC CAPACITORS

MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

C³ ceramic cased capacitors, with a new, unique design concept, are ideally suited for continuous operation up to +200°C. Problems associated with epoxy cased-epoxy potted capacitors, such as material deterioration, cracks in cases and potted areas, are nonexistent, even at +200°C.

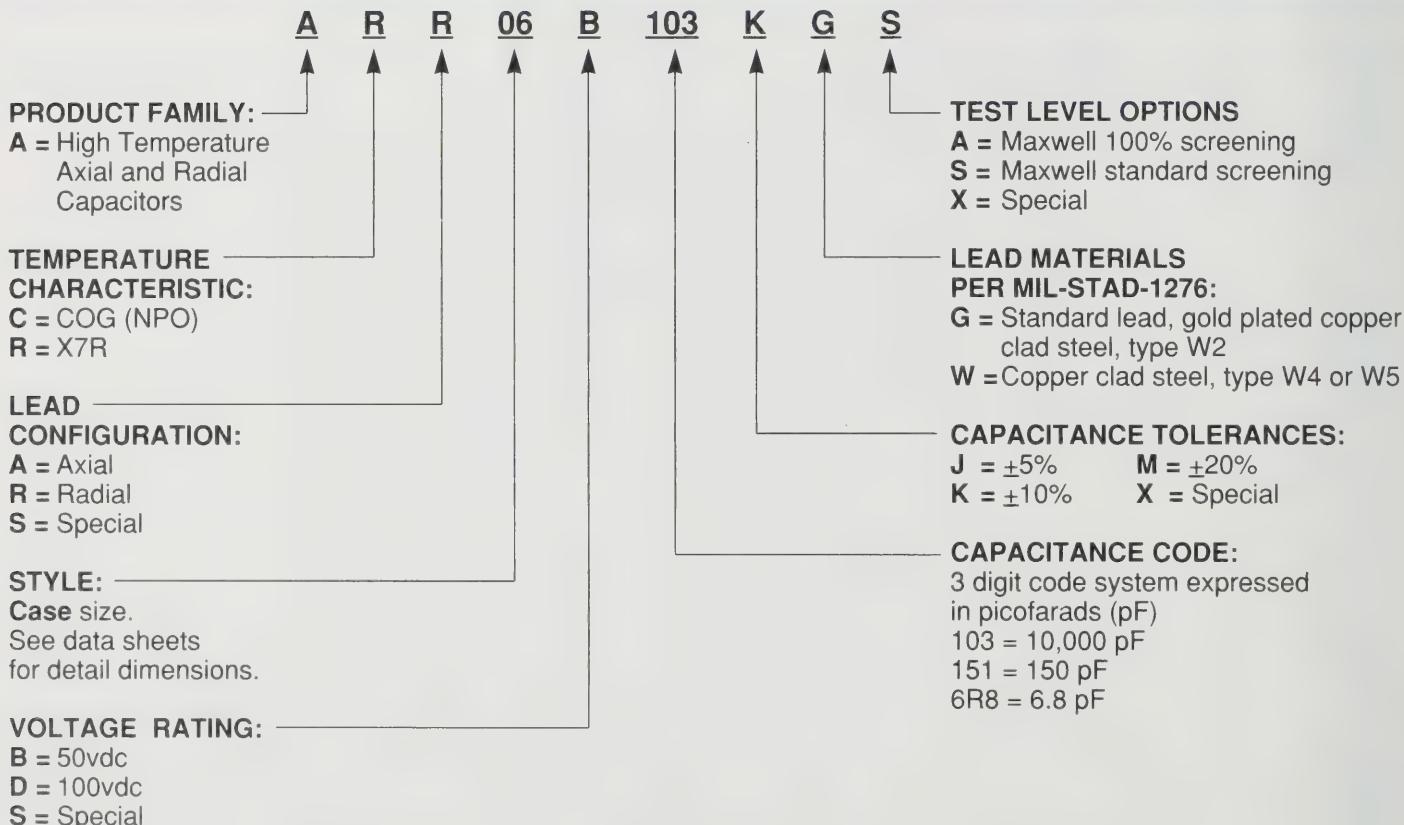


- Uniform coefficient of linear expansion eliminates chip cracking during thermal shock.
- No "pull-away" of epoxy potting from epoxy case at elevated temperatures.
- Impervious to moisture penetration.

Specially formulated X7R ceramic materials result in a retention of 40% of the +25°C capacitance. Dissipation factor drops from 1.8% at +25°C to .05% at 200°C. At 120°C the ceramic undergoes a transformation (crystalline inversion) resulting in the material changing from ferroelectric to paraelectric – no piezoelectric behavior. Typical applications include oil well logging (down hole), jet engine controls, geophysical pressure probes and, in the future, SDI (Strategic Defense Initiative).

Installation: Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Soldering temperature should not exceed +300°C.

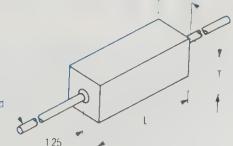
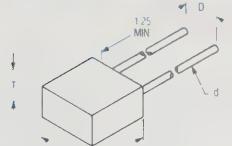
PART NUMBER AND ORDERING INFORMATION



[®]C³ = Ceramic Cased Capacitors, Patent # 4,931,899.

***C³ HIGH TEMPERATURE (+200°C)
AXIAL AND RADIAL CERAMIC CAPACITORS
X7R DIELECTRIC**

MAXWELL
SIERRA CAPACITOR/FILTER Division

Dimensions	Style	Axial					Radial				
		16	25	39	50	69	05	06	07	08	09
L		.170 max.	.270 max.	.400 max.	.520 max.	.720 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.
W		.080 max.	.100 max.	.150 max.	.265 max.	.370 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.
T		.080 max.	.100 max.	.150 max.	.160 max.	.160 max.	.100 max.	.100 max.	.150 max.	.100 max.	.150 max.
D							.200 ± .030	.200 ± .030	.200 ± .030	.400 ± .030	.400 ± .030
d		.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002	.025 ± .002	.020 ± .002	.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002
WVDC		50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100
100 (pF)											
120											
150											
180											
220											
270											
330											
390											
470											
560											
680											
820											
1000											
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2700											
3300											
3900											
4700											
5600											
6800											
8200											
.01 (Mfd)											
.012											
.015											
.018											
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2.7											
3.3											
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4.7											
5.6											
6.8											
8.2											

NOTES:

1. X7R Dielectric
2. Capacitor sizes and capacitance values shown are standard. Other sizes and capacitance values available upon request.
3. **Capacitance Tolerance:** ±5%, ±10%, ±20%
4. **Marking:**

Capacitance (3 digit code)
Manufacturer's I.D.
Tolerance
Voltage
Lot/Date Code

GENERAL SPECIFICATIONS:

Voltage Rating: 50/100vdc at +200°C

Temperature Characteristic: $\Delta C = \pm 15\%$ from -55°C to +125°C

Capacitance: Tested at 1KHz, 1.0vrms

Dissipation Factor (tan δ): ≤ 2.5% at 1KHz, 1.0vrms

Insulation Resistance: ≥ 100,000 MΩ or 1,000 MΩ • μF minimum, whichever is less, @ +25°C.

≥ 10,000 MΩ or 100 MΩ • μF minimum, whichever is less, @ +125°C.

Dielectric Withstanding Voltage: 250% of rated dc voltage.

*C³ HIGH TEMPERATURE (+260°C) AXIAL AND RADIAL CERAMIC CAPACITORS

 MAXWELL
SIERRA CAPACITOR/FILTER Division

APPLICATIONS:

C³ ceramic cased capacitors, with a new, unique design concept, are ideally suited for continuous operation up to +260°C. Problems associated with epoxy cased-epoxy potted capacitors, such as material deterioration, cracks in cases and potted areas, are nonexistent, even at +260°C.

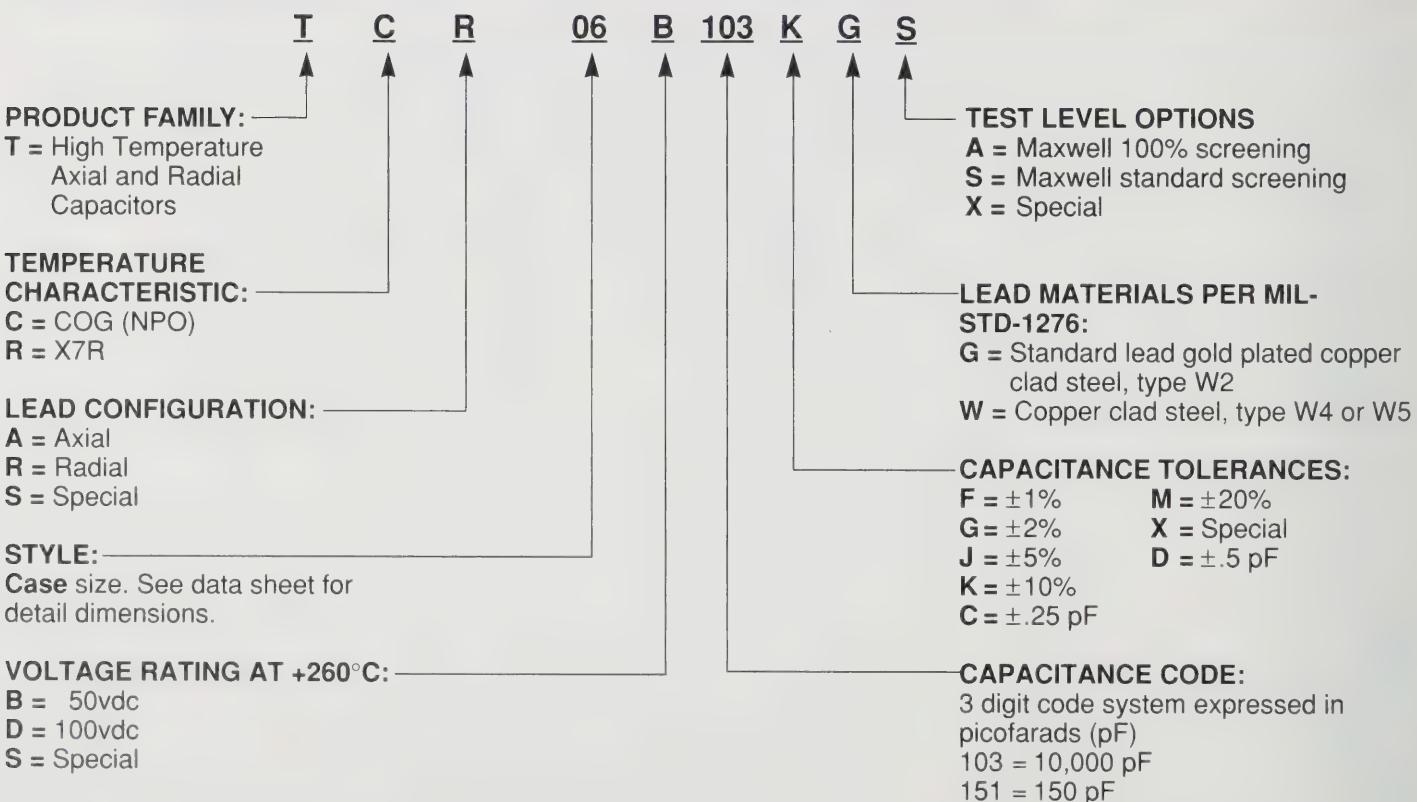
- Uniform coefficient of linear expansion eliminates chip cracking during thermal shock.
- No "pull-away" of epoxy potting from epoxy case at elevated temperatures.
- Impervious to moisture penetration.
- Superior volumetric efficiency.



NPO capacitors, which exhibit little change in capacitance with variations in temperature, are used in RF oscillators, precision timing circuits, wave filters and other circuits requiring a predictable linear temperature coefficient.

Installation: Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Soldering temperature should not exceed 300°C.

PART NUMBER AND ORDERING INFORMATION

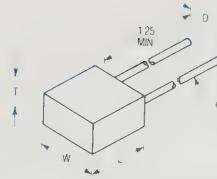
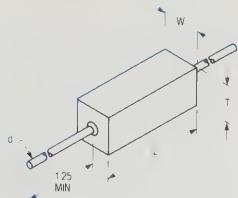


*C3 = Ceramic Cased Capacitors, Patent No. 4,931,899

*C³ HIGH TEMPERATURE (+260°C) AXIAL AND RADIAL CERAMIC CAPACITORS

COG (NPO) DIELECTRIC

MAXWELL
SIERRA CAPACITOR/FILTER Division



AXIAL

RADIAL

Dimensions	STYLE	16		.25		39		50		69		.05		.06		.07		.08		.09		
		L	.170 max.	W	.270 max.	T	.400 max.	L	.520 max.	W	.720 max.	T	.200 max.	L	.300 max.	W	.300 max.	T	.300 max.	L	.500 max.	W
	L	.080 max.		.100 max.		.150 max.		.265 max.		.370 max.		.200 max.		.300 max.		.100 max.		.150 max.		.100 max.		.150 max.
	W																					
	T																					
	D																					
	d																					
	WVDC	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	
Capacitance Range	1.0 (pF)																					
	1.2																					
	1.5																					
	2.2																					
	3.3																					
	4.7																					
	6.8																					
	10																					
	15																					
	22																					
	33																					
	47																					
	68																					
	100																					
	120																					
	150																					
	180																					
	220																					
	270																					
	390																					
	560																					
	820																					
	1200																					
	1800																					
	2700																					
	3900																					
	5600																					
	8200																					
	.01 (Mfd)																					
	.012																					
	.015																					
	.018																					
	.022																					
	.027																					
	.033																					
	.039																					
	.047																					
	.068																					
	.082																					
	.1																					
	.12																					
	.15																					
	.18																					
	.22																					
	.33																					
	.39																					
	.47																					
	.56																					
	.68																					
	.82																					

NOTES:

1. COG (NPO) Dielectric

2. Capacitor sizes and capacitance values shown above are standard. Other sizes and capacitance values are available upon request.

3. Capacitance Tolerances:

±1%, ±2%, ±5%, ±10%, ±20%

Capacitance (3 digit code), Manufacturer's I.D.,
Tolerance, Voltage, Lot/Date Code, Red Dot = 260°C

*C³ = Ceramic Cased Capacitors, Patent # 4,931,899

GENERAL SPECIFICATIONS:

Voltage Rating: 50/100vdc at +260°C

Temperature Coefficient: $\Delta C = 0 \pm 30\text{ppm}/^\circ\text{C}$ from -55°C to +125°C

Capacitance: Tested at 1MHz, 1.0vrms for ≤100pF

1KHz, 1.0vrms for ≤100pF

Dissipation Factor ($\tan \delta$): ≤ .15% at same test conditions as capacitance measurements.

Insulation Resistance: ≥ 100,000 MΩ or 1,000 MΩ • μF minimum, whichever is less, @ +25°C.

≥ 10,000 MΩ or 100 MΩ • μF minimum, whichever is less, @ +125°C.

Dielectric Withstanding Voltage: 250% of rated dc voltage.

*C³ HIGH TEMPERATURE (+260°C) AXIAL AND RADIAL CERAMIC CAPACITORS

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SIERRA CAPACITOR/FILTER Division

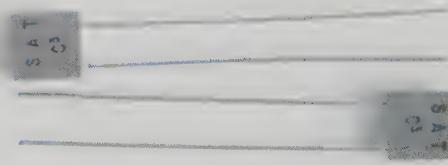
APPLICATIONS:

C³ ceramic cased capacitors, with a new, unique design concept, are ideally suited for continuous operation up to +260°C. Problems associated with epoxy cased-epoxy potted capacitors, such as material deterioration, cracks in cases and potted areas, are nonexistent, even at +260°C.

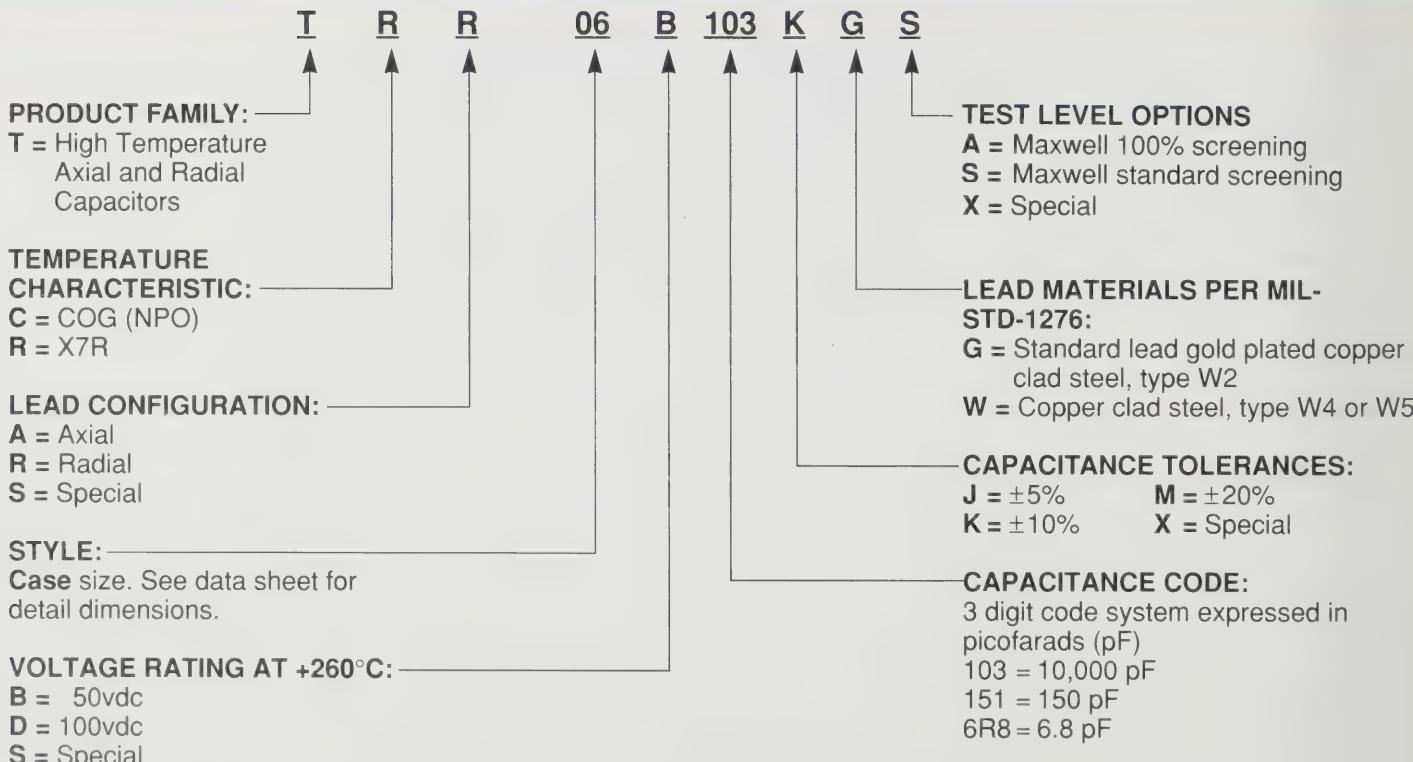
- Uniform coefficient of linear expansion eliminates chip cracking during thermal shock.
- No "pull-away" of epoxy potting from epoxy case at elevated temperatures.
- Impervious to moisture penetration.
- Superior volumetric efficiency.

Specially formulated X7R ceramic materials result in a retention of 40% of the +25°C capacitance at +200°C. Conventional X7R materials lose up to 75% of the +25°C capacitance. Dissipation factor drops from 1.8% at +25°C to 0.5% at 260°C. At 120°C the ceramic undergoes a transformation (crystalline inversion) resulting in the material changing from ferroelectric to paraelectric — no piezoelectric behavior. Typical applications include oil well logging (down hole), jet engine controls, geophysical pressure probes and, in the future, SDI (Strategic Defense Initiative).

Installation: Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Soldering temperature should not exceed 300°C.



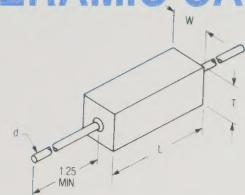
PART NUMBER AND ORDERING INFORMATION



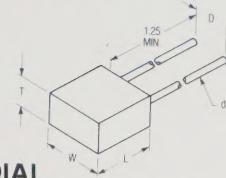
*C3 = Ceramic Cased Capacitors, Patent No. 4,931,899

*C³ HIGH TEMPERATURE (+ 260°C) AXIAL AND RADIAL CERAMIC CAPACITORS X7R DIELECTRIC

MAXWELL
SIERRA CAPACITOR/FILTER Division



AXIAL



RADIAL

Dimensions	STYLE	16	25	39	50	69	05	06	07	08	09
L	.170 max.	.270 max.	.400 max.	.520 max.	.720 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.	
W	.080 max.	.100 max.	.150 max.	.265 max.	.370 max.	.200 max.	.300 max.	.300 max.	.500 max.	.500 max.	
T	.080 max.	.100 max.	.150 max.	.160 max.	.160 max.	.100 max.	.100 max.	.150 max.	.100 max.	.150 max.	
D						.200 ± .030	.200 ± .030	.200 ± .030	.400 ± .030	.400 ± .030	
d	.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002	.025 ± .002	.020 ± .002	.020 ± .002	.020 ± .002	.025 ± .002	.025 ± .002	
VVDC	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	50 100	
Capacitance Range	100 (pF)										
	120										
	150										
	180										
	220										
	270										
	330										
	390										
	470										
	560										
	680										
	820										
	1000										
	1200										
	1500										
	1800										
	2200										
	2700										
	3300										
	3900										
	4700										
	5600										
	6800										
	8200										
	.01 (Mfd)	.012									
	.015	.018									
	.022	.027									
	.033	.039									
	.047	.056									
	.068	.082									
	.1	.12									
	.15	.18									
	.22	.27									
	.33	.39									
	.47	.56									
	.68	.82									
	1.0	1.2									
	1.5	1.8									
	2.2	2.7									
	3.3	3.9									
	4.7	5.6									
	6.8	8.2									

NOTES:

1. X7R Dielectric
2. Capacitor sizes and capacitance values shown above are standard. Other sizes and capacitance values are available upon request.

3. Capacitance Tolerances: ±5%, ±10%, ±20%

4. Marking:

Capacitance (3 digit code)

Manufacturer's I.D.

Tolerance

Voltage

Lot/Date Code

Red Dot = 260°C

GENERAL SPECIFICATIONS:

Voltage Rating: 50/100vdc at +260°C

Temperature Characteristic: $\Delta C = \pm 15\%$ from -55°C to +125°C

Capacitance: Tested at 1KHz, 1.0vrms

Dissipation Factor ($\tan \delta$): ≤ 2.5% at 1KHz, 1.0vrms

Insulation Resistance: ≥ 100,000 MΩ or 1,000 MΩ • μF minimum, whichever is less, @ +25°C.

≥ 10,000 MΩ or 100 MΩ • μF minimum, whichever is less, @ +125°C.

Dielectric Withstanding Voltage: 250% of rated dc voltage.



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